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FISHERY RESEARCH

Job Completion Report
Project F-73-R-15
Subproject I, Study I

STATEWIDE ANGLER OPINION AND HARVEST SURVEYS
Creel Census System

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JOB COMPLETION REPORT

State of: Idaho Name: Statewide Angler Ooinion and Harvest Surveys

Project: F-73-R-15 Title: Creel Census System

Subproject: 1

Study: I Job: 2

Period Covered: April 1, 1992 to March 31, 1993

ABSTRACT

The Creel Census System is a computer program that provides for the entry of data and the calculation of angler effort, catch rate, harvest and yield estimates from roving and access creels. The program is written in Clipper for use on an IBM compatible PC. dBase III + compatible files store a creel survey definition, instantaneous angler counts, angler interviews and length, weight, tag and fin clip data. The program allows temporal and spacial statification with the assignment of nonuniform sampling probabilities. The instantaneous counts data and the average number of hours available for fishing in each day are used in the calculation of estimated angler effort and associated variance. The angler interview data of the number of anglers and the hours fished are used to calculate estimated overall catch rates and for up to twenty-four fish species. Effort and catch rates are used to calculate the estimated overall harvest and for up to twenty-four fish species. These calculations can be done on records restricted to certain criteria, such as counts and interviews done between certain dates. The length and weight data and harvest are used to calculate the estimated overall yield and for up to twenty-four fish species. Tag and fin clip data is used to calculate the distribution of tags and fin clips per fish species. An allometric growth equation for up to twenty-four fish species is calculated from the length and weight data. This manual contains revisions that required a new release, Version 2.

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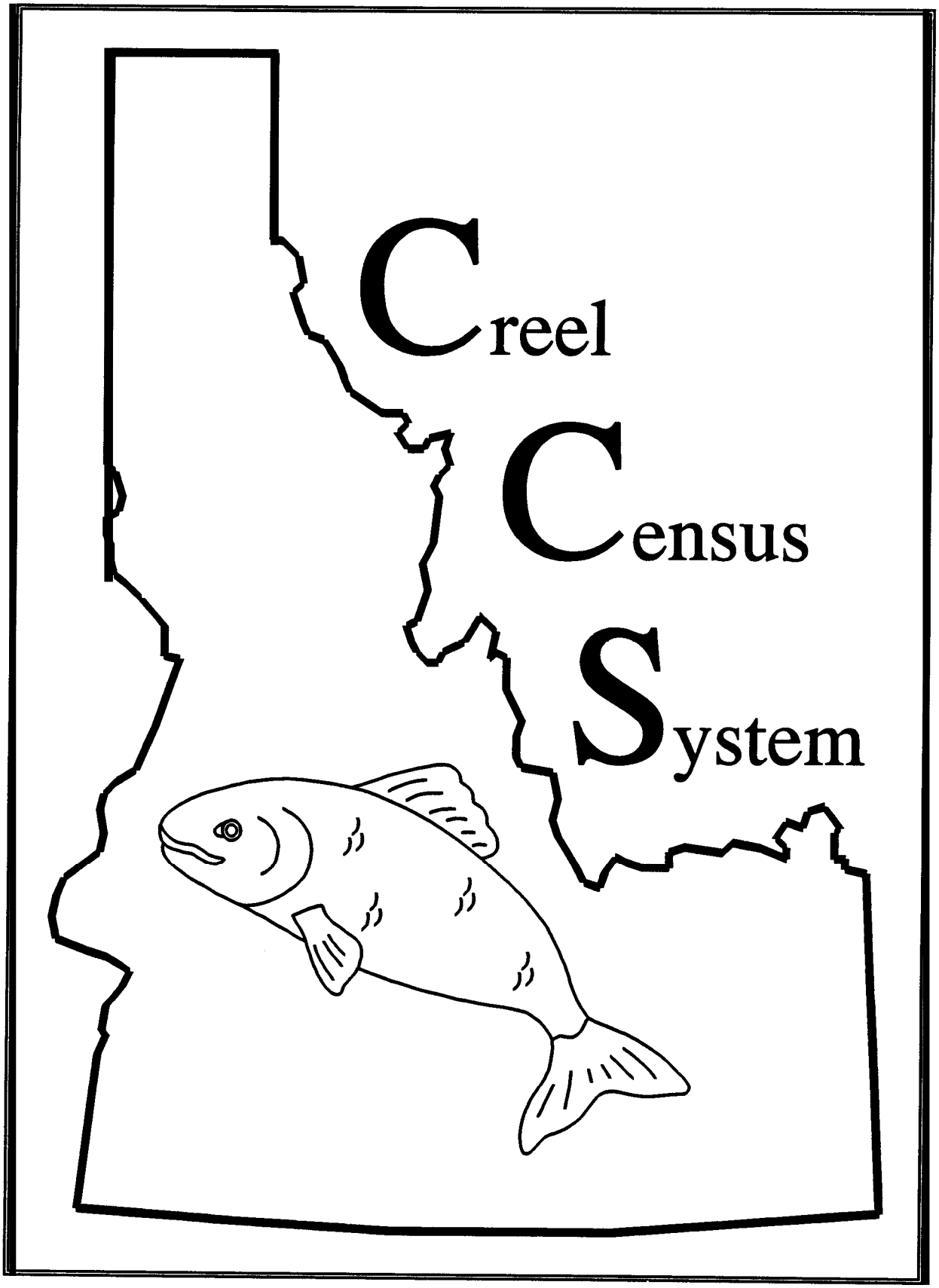

Creel
Census
System

Creel Census System
Technical Reference Manual

1992 - Idaho Department of Fish and Game.

Version 2.0 Release 1
Print Date: March 25, 1993

Coordination by: Tom McArthur
Programming by: Nuralima Boydstun and Stephen T. Reece

Preface

You should read this entire manual before installing and running the Creel Census System (CCS).

The following are conventions used in this manual:

- <ENTER> refers to pressing the key listed, in this case the enter or return key. Other keys might be <ESC> for the escape key, etc... **lower case italics* indicates variable input, for example:
  System Directory: drive:lpathname. The user is to type in a valid drive and path.
- [l Brackets indicate an optional entry. Items enclosed in brackets are not required. Do not include the brackets if entering the option.

A few standards for keyboard and mouse:

- *Press <CTRL><ENTER> to end an edit and save the changes.
- *Press <ESC> to end an edit and discard changes. This also exits from most situations, menus, windows, screens, etc...
- The left mouse button functions the same as <ENTER> on the menu options, and selected areas of edit screens.
- *The right mouse button functions the same as <ESC> in most situations. *Press the highlighted letter on menus to select that item.
- Dimmer menu items are not available for selection.

Hardware specifications:

- IBM Compatible PC with 640K base memory. At least 420K must be available to run the creel system.
- 5 Y4 "HD floppy drive or 3 % "HD floppy drive.
- * Hard drive with at least 750K free for the system plus additional space for data.
- *MS-DOS 3.3 or above.

*** * Warnings:**

This program is written in Clipper 5.01. ***Do not use dBase or dBase IV to read the files used by this program.*** Corruption or complete loss of data could result. To create a customized report, copy the data files into another directory and generate the report using dBase with the copied files. Always use the Creel Census System (CCS) to change the data. See Appendix A - Special Situations.

The Creel Census System (CCS) requires a large amount of memory. No TSR or memory resident programs should be in memory when the Creel Census System runs.

Table of Contents

1 - Installation

The CONFIG.SYS file must have the following for the Creel Census System to run properly:

FILES=40
BUFFERS=2 0

If the FILES and BUFFERS statements are smaller than these numbers, the installation program will change the CONFIG.SYS file. The install program will copy your current CONFIG.SYS file to CONFIG.BKI. A message will appear at the end of installation. You must **re-boot** your computer by pressing <CTRL> <ALT> <DELETE> before running the Creel Census System.

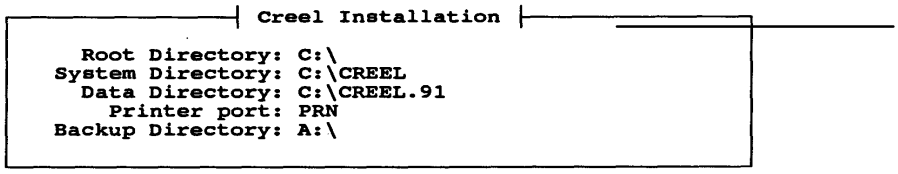
The user can abort the installation by pressing <ESC> from the setup window. A message will appear and installation will end.

Insert the Creel Installation diskette in drive a:.

Type: A: <ENTER>

Type: INSTALL <ENTER>

A screen will appear similar to the following:



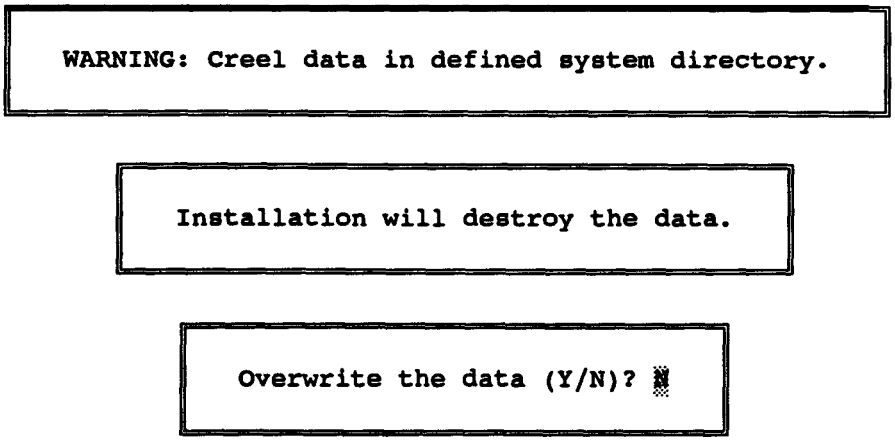
The user should enter the name of the directory which stores batch files for the root directory. This directory is usually called C:\BAT or C:\BATCH or C:\. A batch file will be created in this directory that allows the user to execute the creel system from any directory on the computer.

The system directory stores the program and it's files.. The default name for it is C:\CREEL. If the user wishes to change this directory, use the arrow keys to move the light bar to the "System Directory:". Type the desired drive and directory and press <ENTER> . If the directory does not exist, the install program will create it. Note that if an older creel system is stored in the system directory, it will be erased. **The system and data directories must be different.** To change the default data directory, move the light bar with the arrow keys to "Data Directory:". Type the desired drive and directory, then press < ENTER >. If the data directory does not exist, it will be created. If data is in the data directory, the install program will copy it to the current Creel Census System format. If the user wishes to use data of a creel in another directory, use the setup option discussed in "Running the Creel Census System". .

WARNING: Do not select a directory containing data for the SYSTEM directory. The data will be lost.

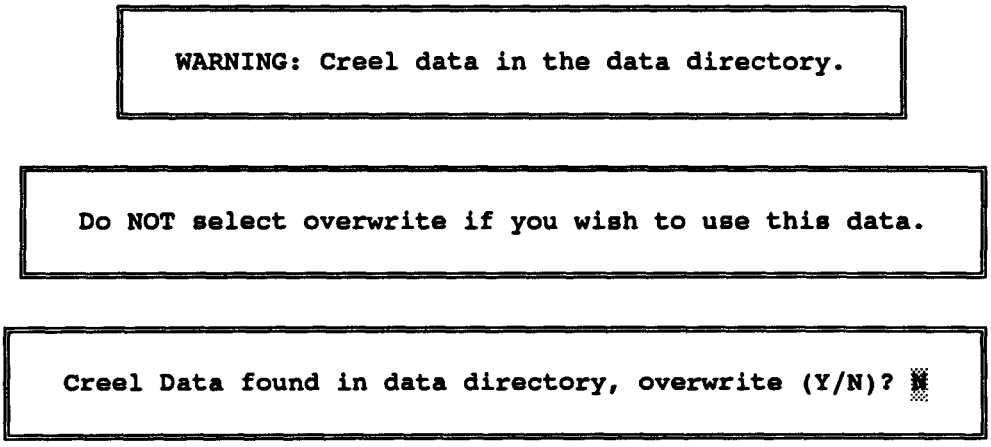
If there is data in the directory selected for the system, a series of messages will appear. Select 'Y' to overwrite everything in the directory. Select 'N' to save the contents

of the directory. Restart installation and select a different directory for the creel system.



Select 'N' if you wish to save the data. The installation will abort and the following message will appear:

If the user selects a directory which already contains data for the data directory, a message will appear. Select "N" if you wish to keep the creel data. The old data will be copied to the new format and used by the Creel Census System. Select "Y" to erase the old creel data.



The option "Printer Port" is the destination of all print jobs. PRN is the default printer port. The following are valid options for printer ports:

PRN
LPT1
LPT2
COM1
COM2
COM3
COM4
[drive:]\ directory\ ] filename

The user can enter a file name for the printer port. Use this option to direct reports to a file. You could later print this file or use it with another program such as WordPerfect. Each print job overwrites this file so any previous report contained in it will be lost. Copy this file or change the file name before you "print" another report.

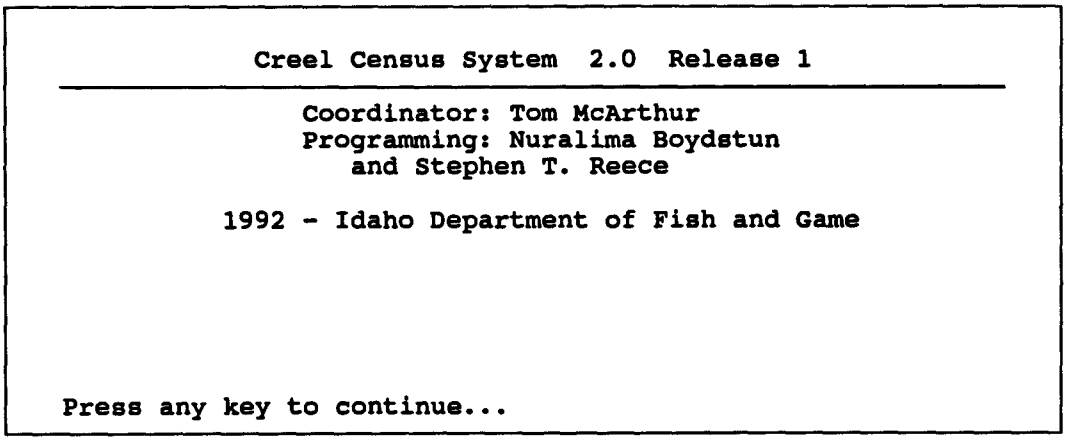
Your data will be saved to the directory you designate as backup when you select "Backup Databases" from the system menus. This should be either A:\ or B:\.

Press: <CTRL><ENTER> together to proceed.

The installation program will now return to the DOS prompt.
Type: C : <ENTER>
Your system is ready to run the Creel Census System.
Remove the installation diskette.

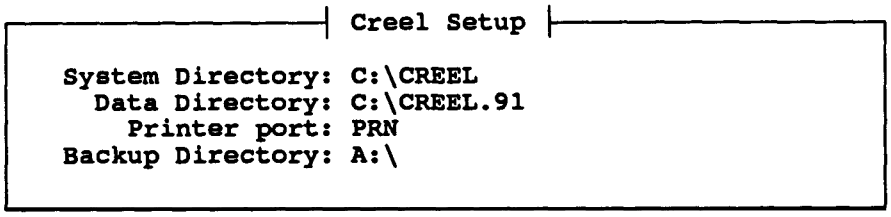
2 - Running the Creel Census System

At the DOS prompt, type CREEL <ENTER>. The user will see the opening screen.



Watch the bottom of the screen for brief descriptions of menu items or instructions.

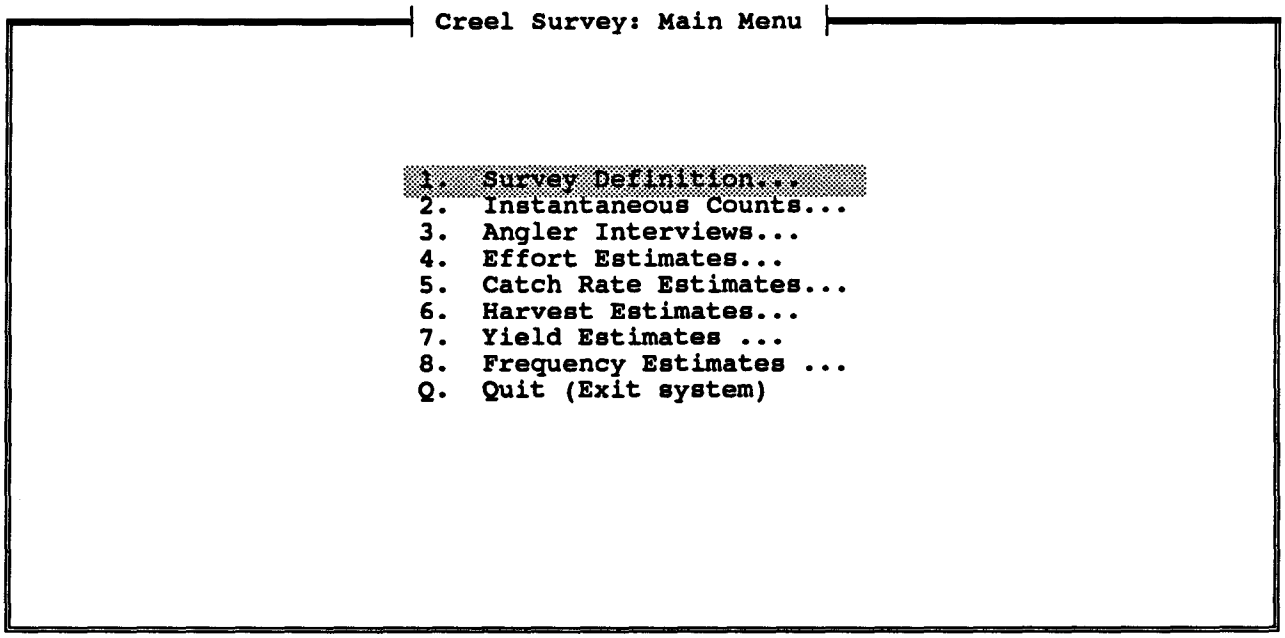
The first time you enter the Creel Census System the setup screen appears.



Check that the setting are correct. If they are not , you can change them by typing in the correct drives and paths. Use the arrow keys to move the light bar to the item you wish to change. Type in the correct entry. Press <ENTER> to save each item or <CTRL><ENTER> to save the entire screen. .

If you want to use a different data set, printer port, or backup directory, press <ALT><S> and the setup window will appear; see '3 - Creel System Commands'. The system and data directories can be changed ONLY from the Creel Survey Main Menu. The other two options can be changed from anywhere in the system.

Next a menu screen will appear:



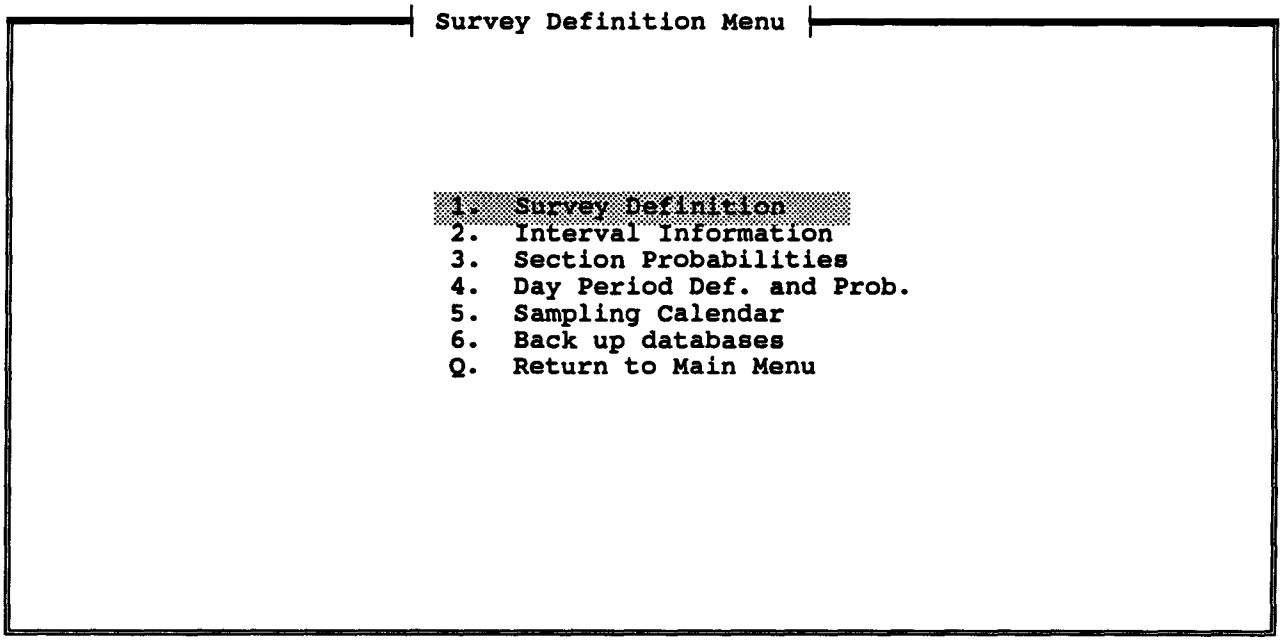
Enter Survey Definition Menu

Select "1. Survey Definition..." to start a new creel. The entire Creel System uses the data entered for the survey definition.

Use the arrow keys to move the highlight bar over the Survey Definition selection and press <ENTER>, or press <1> and press <ENTER> . If a mouse is installed, move the mouse cursor over the menu selection and press the left mouse button to select the item.

2.1 - Survey Definition

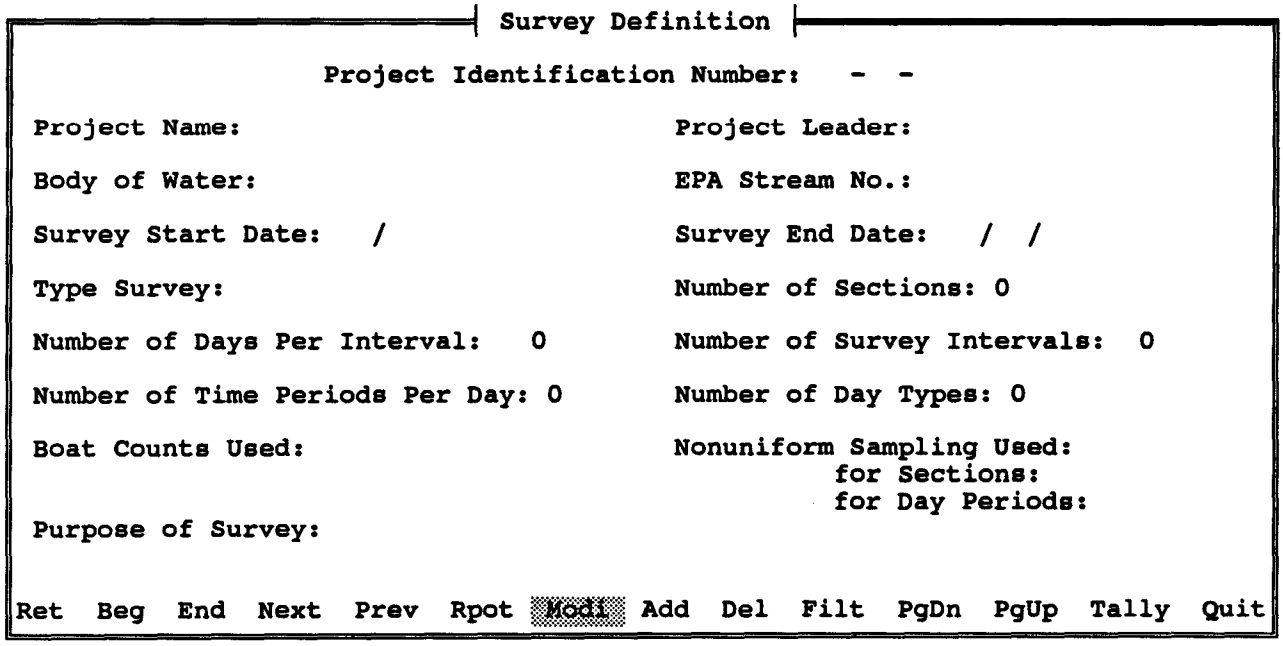
The Survey Definition Menu will appear:



Enter Survey Definition Screen

Complete both "1. Survey Definition" and "2. Interval Information" before you attempt to use the rest of the system.

Select "1. Survey Definition." The screen for the survey definition will appear. There is a base menu at the bottom of the window:



Modify Record

Screen Bottom or Base Menu

The last line of the screen is a menu. This menu is the same on all screens throughout the Creel Census System (CCS). To make a choice, move the highlight to the desired choice using the arrow keys or mouse and press < Enter> .

•Ret(rieve) Displays the next record in a database file with the designated values. A submenu will appear with choices of fields to search on. Move the highlight bar to the desired field using the arrow keys or mouse and press < Enter> . Enter the information requested and again press < Enter > .

•Beg(ir ieglays the first record in the database file.

•End Displays the last record in the database file.

•Next Displays the next record in the database file.

•Prev(ious) Displays the previous record in the database file.

•Report Displays a menu of available reports. To make a choice, move the highlight bar to the desired report using the arrow key or mouse and press < Enter> . If a filter was in effect during the calculations (see "Filt(er)" below) those filter conditions will be printed at the top of the report. If a filter is set during the printing of the report, those filter conditions will also be printed.

•Modi(fy) Edits the current record . NOTE: this is the default option when the screen appears. If you wish to add NEW records, select Add.

•Add Adds a new record to the database file. Usually information from the survey definition (project ID, water name) and previous record (date, section number) is automatically filled in. To change this information, type the desired data in it's place. Press <Enter> to accept the data for that field.

•Del(ete) Deletes the displayed record from the database.

•Filt(er) A filter "hides" records not meeting certain criteria. These records will not be included in calculations nor printed. For example, if you enter 2 in the section field on the filter setting screen, only records from section 2 will be available to display on the screen, for calculations, or for reports. Records from other sections are "hidden." The database is not changed however, and when you remove the filter, all records will again be available. A menu will appear when you select Filt(er). To choose a filter operation, move the lightbar to the desired selection using the arrow keys or mouse and press < Enter> . Use "Set Filter" to select filter conditions. Use "Apply Filter" to activate the filter when conditions have already been selected. Use "Remove Filter" to turn the filter off.

•PgDn Displays the next page of data.

•PgUp Displays the previous page of data.

•Tally Displays the total number of records in the database, or the number matching the filter conditions if a filter is turned on.

•Quit Exits from the screen and returns to the previous menu.

Keyboard Commands:

Certain keys or combinations of keys perform special functions within the Creel Census System. To invoke these functions, press the indicated keys. Some keys work only from certain positions within the system.

<ALT> <M> Displays available memory. It is possible to execute this command only from the data entry screens.

<ALT> <S> Enters the set up screen and allows the user to change the system configuration. It is possible to change the program and data directories only from the Creel Survey Main Menu. The other options are changeable from anywhere in the system.

<ALT> <T> Displays the current time.

<ALT> <V> Displays the version of the Creel Census System.

<CTRL> <ENTER> Ends a data or filter entry screen and saves the changes.

<CTRL> <N> Starts a new creel. The user will be prompted to enter the directory for the new creel. If data exists in that directory, the program will ask if the user wants that data overwritten. Choose "Y" to delete the data. If the directory does not exist, the program will create it.

<ESC> Abort. Exit and save nothing.

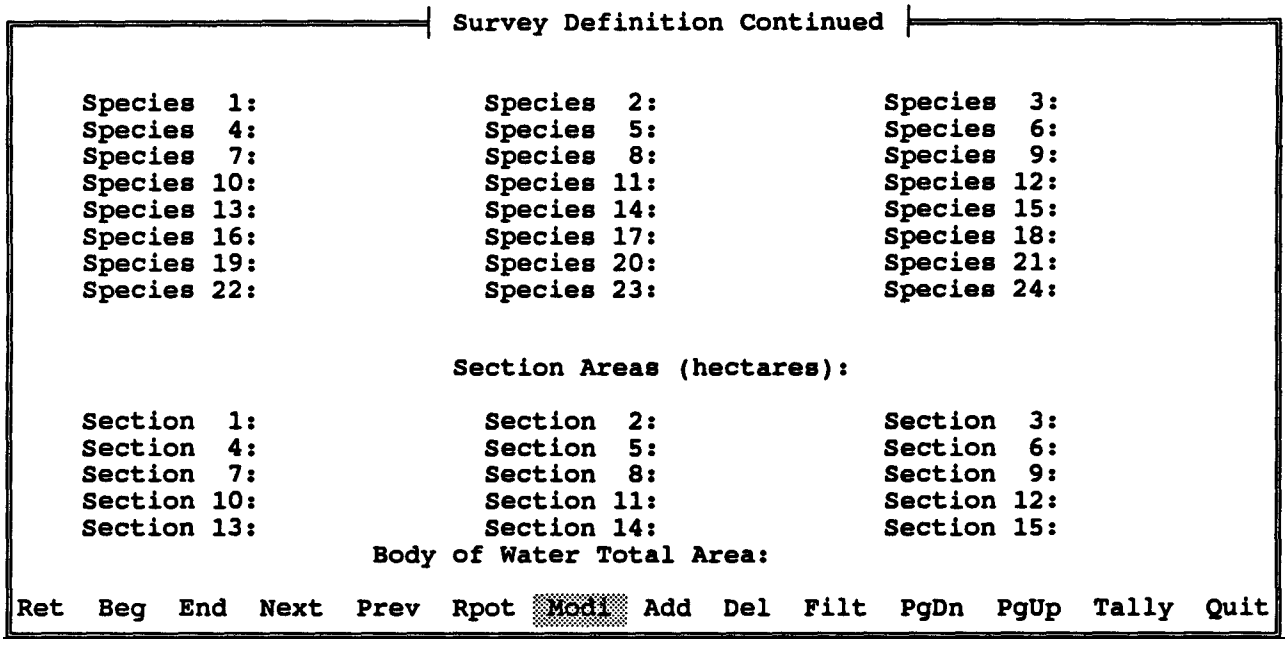
<Fl > Gives context sensitive help. A window will appear with help information about the current section, but not all sections have help information available**.** Use the arrow keys to scroll through the help data. The help index also does not exist.

Entering Data

To enter a survey definition, select "Add" using the arrow keys or mouse. If a definition has been entered, the "Add" option will be disabled. The program allows only one survey definition per creel. To change the definition, select "Modify."

To change creels (data directories), return to the Main Menu by pressing "Quit" twice. It is possible to change creels (data directories) only from the Main Menu. Press <Alt> <S> and the set up window will appear. Enter the data directory desired, press < Ctrl > < Enter > , and return to this point using the menus.

After the user has selected Add or Modify, a highlight bar will appear by Project Identification Number. You can begin entering or changing data. Use the arrow keys to navigate the screen, or move the mouse cursor over the field and press the left mouse button. After the user has entered Purpose, the Page 2 Screen will appear.



Modify Record

Enter as many species names as you need. It is possible to enter any word in these fields including "misc," "other," or "sublegal." It is possible to use any number of species up to twenty-four, but do not leave a species field blank and go on to the next one. The first blank field determines the number of species for which calculations are done throughout the Creel Census System.

After the user enters the last area, the data is saved and control returns to the base menu.

While in Add or Modify, the user can press <CTRL><ENTER> from any position on the screen to save the changes and go on to the next page. To return to the main menu, press <CTRL> <ENTER> once for each page. If the user is on page 1 press <CTRL> <ENTER> twice. Use this when fewer than twenty-four species are entered or if only a few changes are made. All fields on the screen below the cursor position will remain the same.

If the user presses <ESC> or the right mouse button while adding or changing the

survey definition the program aborts and saves nothing. The user will need to enter a survey definition before continuing. If the user was modifying an existing definition, it will remain the same.

After the data has been entered, the screen will look something like this:

PAGE 1:

```
                          Survey Definition

                  Project Identification Number: 03-43-741

 Project Name: LAKE LOWELL CREEL          Project Leader: TERRY HOLUBETZ

 Body of Water: LAKE LOWELL               EPA Stream No.: 00000000000000.00

 Survey Start Date: 01/15/90              Survey End Date: 09/28/90

 Type Survey: ROVING                      Number of Sections: 3

 Number of Days Per Interval:  28         Number of Survey Intervals:  9

 Number of Time Periods Per Day: 3        Number of Day Types: 2

 Boat Counts Used: N                      Nonuniform Sampling Used:
                                                    for Sections: Y
                                                    for Day Periods:  N
 Purpose of Survey:
             COLLECT UPDATED ANGLER USE INFORMATION

Ret  Beg  End  Next  Prev  Rpot  Modi  Add  Del  Filt  PgDn  PgUp  Tally  Quit
```

Modify Record

PAGE 2:

```
                      Survey Definition Continued

    Species  1: LMB          Species  2: CRAPPIE      Species  3: BLUEGILL
    Species  4: PERCH        Species  5: CATFISH      Species  6: BULLHEAD
    Species  7: TROUT        Species  8: SUBLEGAL     Species  9:
    Species 10:              Species 11:              Species 12:
    Species 13:              Species 14:              Species 15:
    Species 16:              Species 17:              Species 18:
    Species 19:              Species 20:              Species 21:
    Species 22:              Species 23:              Species 24:


                          Section Areas (hectares):

    Section  1: 2.0          Section  2: 0.50         Section  3: 0.30
    Section  4:              Section  5:              Section  6:
    Section  7:              Section  8:              Section  9:
    Section 10:              Section 11:              Section 12:
    Section 13:              Section 14:              Section 15:
                      Body of Water Total Area:  2.80

Ret  Beg  End  Next  Prev  Rpot  Modi  Add  Del  Filt  PgDn  PgUp  Tally  Quit
```

Modify Record

The following are guidelines for entering data:

•Project Identification Number: Any combination of characters and numbers. The field requires an entry..

•Project Leader: The name of the person in charge. The field does not require an entry.

•Body of Water: The name of the body of water. The field does not require an entry. •EPA Stream No.: Any combination of characters and numbers. The field does not require an entry..

•Survey Start Date: The date sampling began. The field requires an entry.

•Survey End Date: The last date of sampling. The field requires an entry. *Type Survey: Roving or Access. The field requires an entry.

***Number of Sections: Range - 1 to 15**

A lake can be divided into geographic sections if it is too large to survey completely during each sampling period. Enter one (1) if the lake is undivided. This field requires an entry..

•Number of Days per Interval: Range - 1 to 365

The number of days in each interval. The field requires an entry.

***Number of Survey Intervals: Range - 1 to 52**

The number of intervals in the period of the survey. Enter one (1) if the survey period is undivided. The program calculates this entry using the beginning and ending dates and the number of days per interval. The last interval may contain fewer days than the other intervals. To change the calculated number of intervals, type the desired number and pressing < Enter > .

***Number of Time Periods Per Day: Range - 1 to 9**

Day periods are used for nonuniform sampling. See the section on nonuniform sampling for an explanation. Enter one (1) if the day is undivided. The field requires an entry.

***Number of Day Types: Range - 1 to 3**

Day Type one (1) is Weekdays. Day Type two (2) is Weekend days. Day Type three (3) is unused. Enter holidays as day type two (2). The field requires an entry.

***Boat Counts Used: Range - Y or N**

See 2.4 - Instantaneous Counts for an explanation of this item. The field requires an entry..

***Nonuniform Sampling Used: for Sections: Range - Y or N**

See 2.3 - Nonuniform Sampling for an explanation of this item. The field requires an entry..

•Nonuniform Sampling Used: for Day Periods: Range - Y or N

See 2.3 - Nonuniform Sampling for an explanation of this item. The field requires an entry..

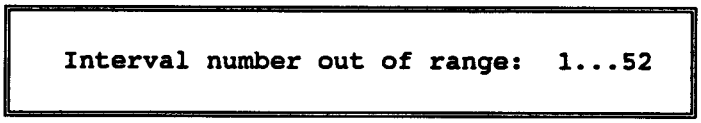
***Purpose of Survey: Informational only. The field does not require an entry.**

***Species Code 1 - 24: The name or designation of up to twenty-four fish species or categories (i.e. sublegal). The fields do not require an entry but no calculations for individual species can be done without an entry here. Do not leave a species field blank and go on to the next one. The program does calculations for species up to the first blank field.**

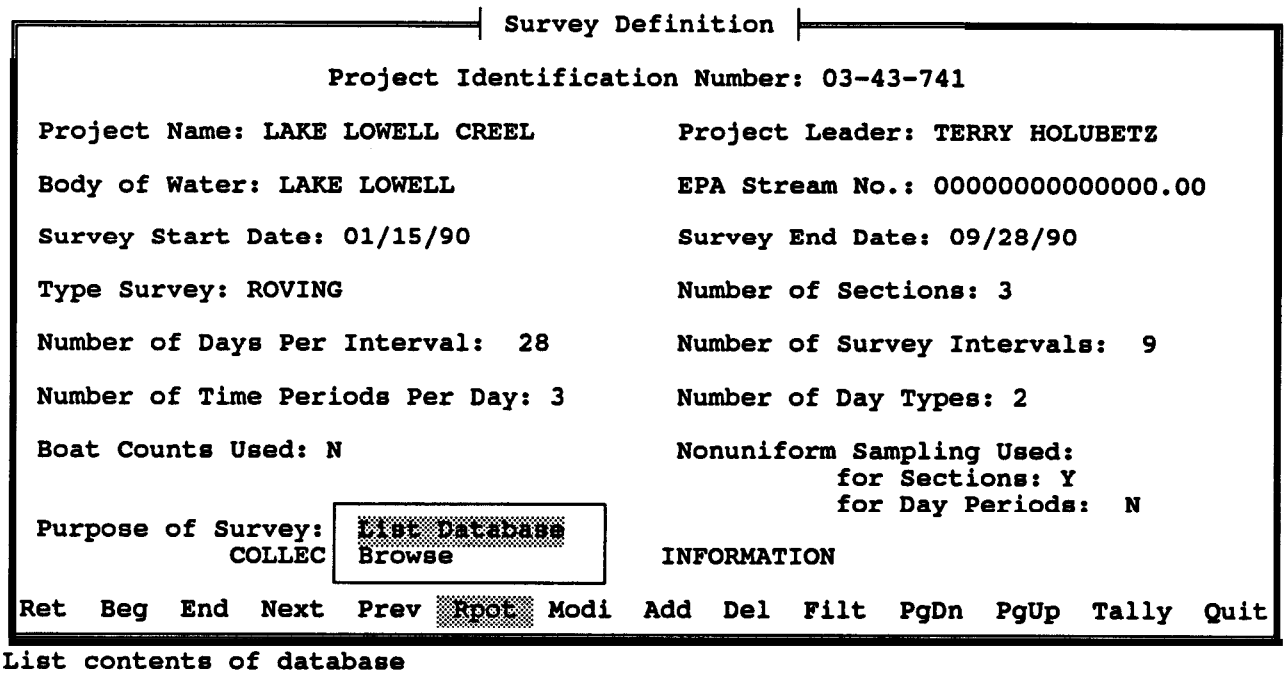
***Section Areas 1 - Number of Sections (maximum 15) in hectares**

1 hectares = 2.741 acres. The field does not requires entry. The program calculates the total area from section areas.

If the user enters an invalid value, an error will appear in the middle of the screen like the one pictured below. Press any key to remove the message and re-enter the data.



To print the data, select "Report." A small menu will appear:



Select "List Database" using the arrow keys and press <Enter>. A report similar to the following will be printed:

```
================================================================================
Date: 08/04/91                    Time:  2:38:10 pm
                        Idaho Department of Fish and Game
                              Creel Survey System
                           Creel Survey Definition

================================================================================
                      Project Identification Number: 03-43-741
Project Name: LAKE LOWELL CREEL      Project Leader:  STEVE
Body of Water:  LAKE LOWELL          EPA Stream No.: 000000000.00
Survey Start Date: 01/15/90          Survey End Date: 09/28/90
Type Survey: ROVING                  Number of Sections:  3
Number Days per Interval: 28         Number of Survey Intervals:  9
Number of Time Periods Per Day: 3    Number of Day Types: 2
Boat Counts Used: N                  Nonuniform Sampling Used:
                                       for Sections: Y
                                       for Day Periods: N
Purpose of Survey:  COLLECT UPDATED ANGLER USE INFORMATION

Species 1:  LMB                      Species  2: CRAPPIE
Species 3:  BLUEGILL                 Species  4: PERCH
Species 5:  CATFISH                  Species  6: BULLHEAD
Species 7:  TROUT                    Species  8: SUBLEGAL

                            Section Areas (hectares)

Section  1:   2.0        Section  2:  0.50        Section  3:  0.30
                         Body of Water Total Area:  2.80

End of Report
```

Another way to print the survey definition is to press the <PRINT SCREEN> key on your keyboard. After the first page has printed, press "PgDn" and then <PRINT SCREEN> again to print the second data page. Use this command to print any screen contents in the Creel Census System.

To view the data in a columnar format, select "Browse" from the report menu. The following screen will appear with some columns off the screen to the left:

Survey Definition

Project ID: 03-43-741

Rec #	PROJECT_ID	PROJ_NAME	LEADER
1	0343741	LAKE POWELL CREEL	TERRY HOLUBETZ

Print Report F1 - Help

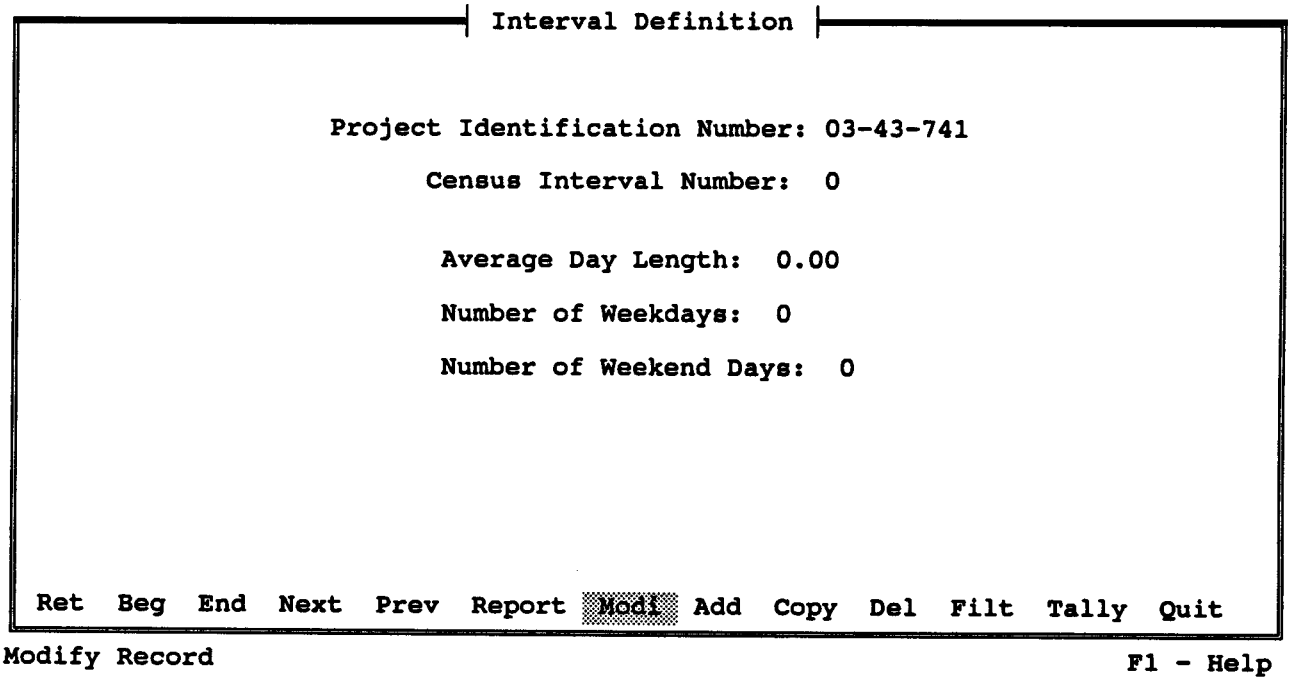
Use the arrow keys to move around the screen. The left and right arrows will move sideways through the data. This enables the user to view the fields that are not visible on the screen. Press <ESC> to exit. The mouse is not supported in "Browse."

The Del option removes the definition from the database. Enter a new survey definition before continuing with the Creel System.

Select Quit or press <ESC> to return to the previous menu. Note, the right mouse button will not return the user to the previous menu.

2.2 - Interval Definition

This section defines the intervals. From the Survey Definition Menu select "2. Interval Information." The interval information screen will appear. To add new interval information, select "Add" by using the arrow keys or mouse and pressing < Enter> . To change information already entered, select "Modify."



Caution: "Add" must be selected for each NEW interval!

The following are guidelines for entering interval definition data:

*Project Identification Number:
Must be the same as the project ID entered in the survey definition. The program fills in this field automatically from the survey definition. To change it, type in the desired information and press < Enter> .

•Census Interval Number: Range - 1 to number of intervals in survey definition
The user must define each interval . The program can do calculations only for defined intervals. If the user defines only selected intervals, the program does calculations only for records in the defined intervals. No error messages are printed. This field requires an entry.

•Average Day L e n g t h : R a n g e - 0 to 24
Average number of hours of daylight in the interval. This field requires an entry.

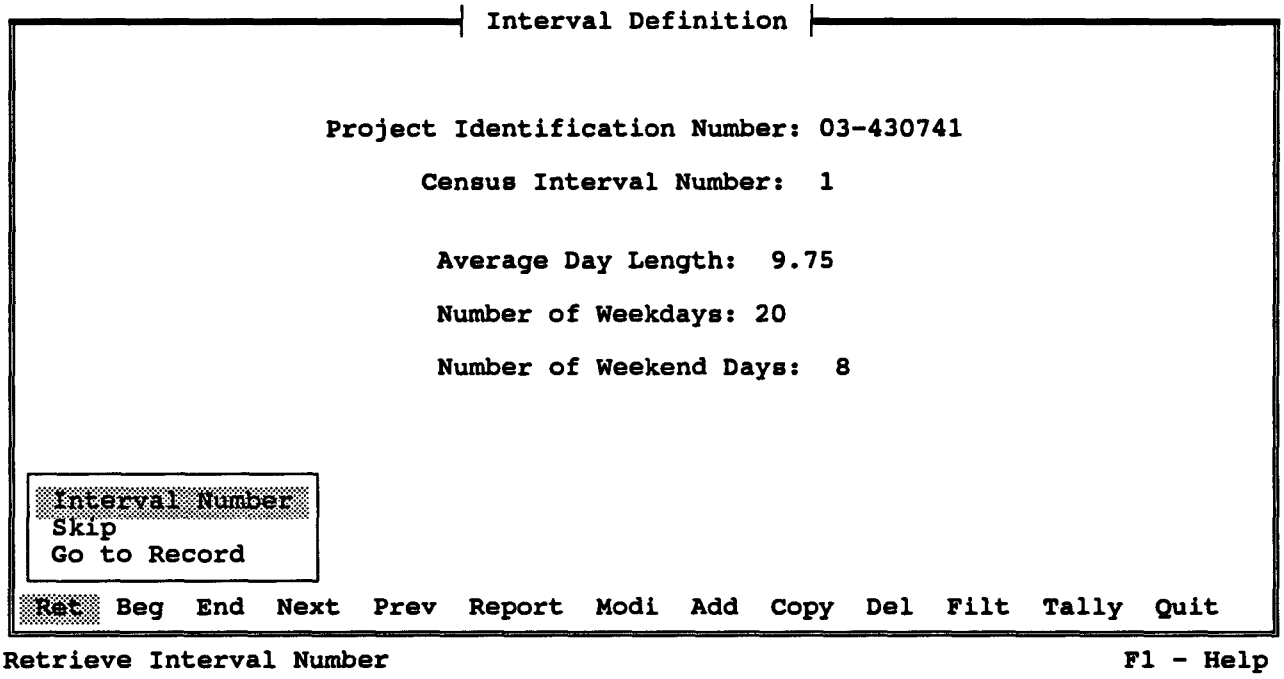
•Number of W e e k d a y s : R a n g e - 1 to 365
The number of weekdays in the interval. This field requires an entry.

•Number of Weekend D a y s : R a n g e - 0 to 365
The number of weekend days in the interval. The sum of the weekdays and weekend days should equal the number of days per interval in the survey definition.

After adding **or modifying, control** returns **to** the base menu.

Beg, End, Next, Prev moves the user through the data. Beg puts the user at the Beginning of the data. End puts the user at the End of the data. Next skips forward 1 record. Prev skips back 1 record.

If the user wishes to skip forward or backward more than one **record, or wishes to** view a specific interval, select Retrrieve). A small menu will appear:



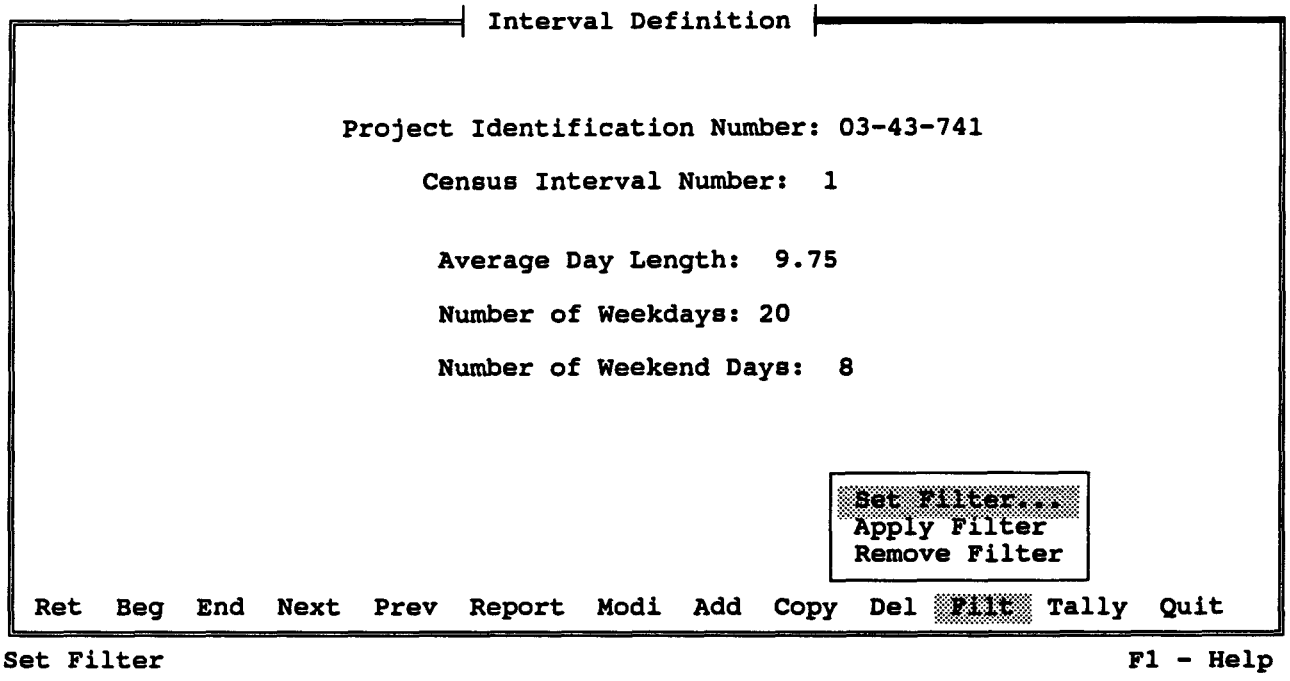
Select the condition to retrieve by. "Interval Number" displays the record with a specific interval number. **"Go** to **Record"** displays the **record** with a specific number. **"Skip"** displays a window.

Type in the number of records to skip. Enter a positive number to move forward; a negative number to move backward. The system will not move past the end or beginning of the database.

Press <ESC> to abort the "Retrieve."

To count the number of records, select Tally from the base menu. If a filter is set, the program counts only those records that are "visible" . Filters will be discussed next. If no filter is set, Tally returns the number of records in the file.

"Filter" allows the user to make only certain records visible at a time. To set a filter, select "Filter" from the base menu. A small menu will appear;



Select "Set Filter" by moving the lightbar with the arrow keys or mouse and pressing < Enter> . A screen will appear which is similar to that used in modifying or adding data. Only certain fields allow entry, however.

If the user wishes to select only those intervals with 9 **week days,** use the **arrow keys or mouse to** select **"Number of** Week Days:"

Type: 9 <CTRL><ENTER>

A window will appear asking if the user wants to apply the filter. Press either "Y" or "N" or use the mouse to select Y or N with the

If the user selects "Y", the filter is turned on. In the lower center of the screen a message saying 'Filter On' will appear. If the user selects "N", the program saves the filter condition. Select "Apply Filter" from the Filter menu to turn the filter on.

Notice that only the records that have nine weekdays will appear. If the user selects Tally, Tally will count only those records with nine weekdays.

To remove the filter, select Filter and then select "Remove Filter." All records are again visible. The filter condition can be re-applied without typing it in again even if the user exits the program. If the filter is active when the user exits the current screen, a window will appear. If you select "Y", the program removes the filter, but the condition is saved for re-application later. If you select "N", the filter is active when you reenter the creel system.

To print the data, select "Report" by moving the lightbar with the arrow keys or mouse

and then press < Enter> . Select "List Database" from the small window that appears. The following report will be displayed on the screen or printed:

RECORD	PROJECT ID	INTERVAL	DAY_ LENGTH	NO_ WEEKDAY	NO_WEEKEN
1	0343741	1	12.00	20	8
2	0343741	2	13.00	20	8
3	0343741	3	14.00	20	8
4	0343741	4	15.00	20	8
5	0343741	5	16.00	20	8
6	0343741	6	15.00	20	8
7	0343741	7	14.00	20	8
8	0343741	8	13.00	20	8
9	0343741	9	12.00	20	8

To view the data in a columnar format select "Report" by moving the lightbar with the arrow keys or mouse and then press < Enter> . Select "Browse" from the small window that appears. The following screen will appear with some columns off the screen to the left:

Interval Definition

Project ID: 03-43-741

Rec #	PROJECT_ID	INTERVAL	DAY_LENGTH	NO_WEEKDAY
1	0343741	1	12.00	20
2	0343741	2	13.00	20
3	0343741	3	14.00	20
4	0343741	4	15.00	20
5	0343741	5	16.00	20
6	0343741	6	15.00	20
7	0343741	7	14.00	20
8	0343741	8	13.00	20
9	0343741	9	12.00	20

Print Report F1 - Help

Use the arrow keys to move around the screen. The up and down arrows will move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up showing the next record. <PAGE UP> and <PAGE DOWN> display the next or previous screen of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible on the screen. Press <ESC> to exit. The mouse is not supported in "Browse."

Select "Del" to remove a record from the interval database. If the user selects "Y" in the confirmation window that appears, the program marks the record for deletion. If the user selects "N", the program does not delete the record.

If there are records marked for deletion when the user exits the current screen, the system asks if it should remove those records from the database. If the user selects "Y", the program deletes the records. If "N" is selected, the program restores the records.

Select "Quit" to return to the previous menu.

Select "3. Backup databases" to backup the database file. Follow the directions that appear in the window. If the window contains the wrong drive letter, press <ESC>. Press <ALT><S> for the setup screen and enter the proper drive letter.

When the user has the proper drive, press any key or the left mouse button to proceed with the backup.

Select "Q. Return to Main Menu" to return to the Creel Survey Main Menu.

2.3 - Nonuniform Sampling

Since it is impractical and economically infeasible to survey every angler on a body of water over an entire fishing season, some method must be used to sample the angler population which is accurate.

One such method is nonuniform or random sampling, which is accurate and can be accomplished with minimum personnel. The basic features of this method of sampling are as follows:

(1) Divide the period to be sampled (i.e. a fishing season) into intervals (i.e. 28 days). Suppose that a fisheries management unit has the personnel to sample six hours, five times per interval. Usually the fishing pressure for weekdays and weekend days is different. Divide the days in each interval into two strata, weekdays and weekend days. Since more fishing occurs on weekends, three sampling days might be assigned to weekend days and two to weekdays. Choose the weekends days to sample at random and give each day an equal chance of being chosen. Choose weekdays similarly.

(2) Sample the whole day, or divide each day into sampling periods (two six hour periods, for example) and assign each period a probability that is proportional to the amount of fishing expected during that period. Calculate these probabilities from previous counts of anglers during the two periods. The probabilities must sum to 1.0. Suppose that previous surveys showed that 40% of fishing occurs between 6.00 and 12.00 and 60% of fishing occurs between 12.00 and 18.00 hours. For each sample day, assign the hours of sampling at random based on the probability of fishing occurring in each period. For example, if *40°x6* of fishing occurs in the earlier hours, assign the numbers 0 - 39 to those hours, and assign 40 to 99 to the later hours. Choose a number between 0 and 99 at random, and sample the hours assigned to that number.

(3) During any one period, sample the whole body of water. If the body of water is too large, divide it into sections and assign a probability to each section that is proportional to the amount of fishing expected in that section. Calculate these probabilities by counting the anglers in various parts of the body of water over time. These probabilities must also sum to 1.0. Suppose that previous studies showed that 30% of fishing occurs over one geographic section of a lake, and 70% occurs over the other. Choose the section to be sampled during each sampling period at random the same as for the period in (2) above.

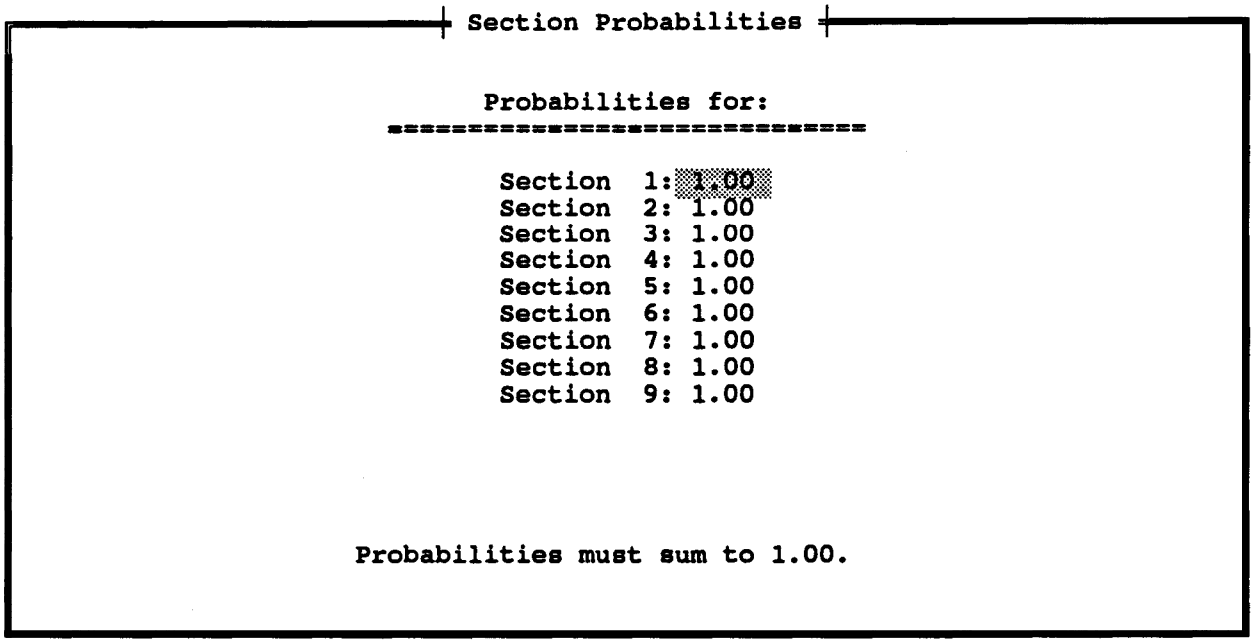
(4) The calculations expand these counts as if the whole day and whole lake were counted when nonuniform sampling for Sections and Day periods is chosen in the Survey Definition. There is only one section and period in the resulting calculation databases.

4) Nonuniform sampling for sections can be used without nonuniform sampling for day periods, and visa versa, or they can be used together.

2.31 - Section Probabilities

This section assigns probabilities to sections.

From the Survey Definition menu, choose "3. Section Probabilities". The following screen will appear:



See section 2.3, Nonuniform Sampling, for an explanation of nonuniform sampling. To enter probabilities, type the number in the highlighted area. There must be a probability for each section defined in the Survey Definition. The probabilities must sum to 1.00. When the user enters the last probability a message will appear with the total if it is not 1.00. The user can change only the last probability entered. If the user needs to change other probabilities, press <ESC> and reenter the probabilities.

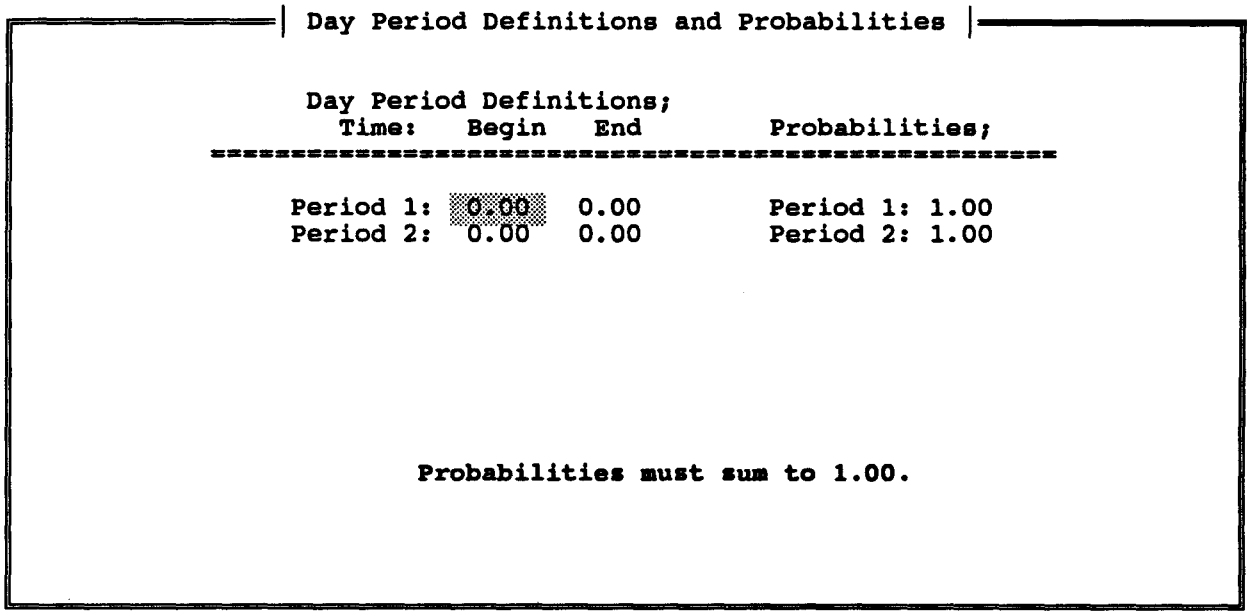
The user can exit from the screen at any time by pressing <ESC> but the program will not save any information.

When the user enters the last probability and their sum is 1.00, the program **saves** them and exits to the Survey Definition Menu. The system uses this information for the calculations **only** if the user selects nonuniform sampling for sections in the **Survey Definition.**

2.32 - Day Period Def. and Prob.

This section defines and assigns probabilities to periods.

Select 4 from the Survey Definition Menu. "4. Day Period Def. and Prob." The following screen will appear:



See section 2.3, Nonuniform Sampling, for an explanation of nonuniform sampling. Section Probabilities and Day Period probabilities can be used separately or together.

Enter the beginning and ending time for each day period and it's associated probability. The probabilities must sum to 1.00. If they do not, a message will appear with the total probability entered. The user can change only the last probability entered. If others are incorrect, press < ESC > and reenter the probabilities.

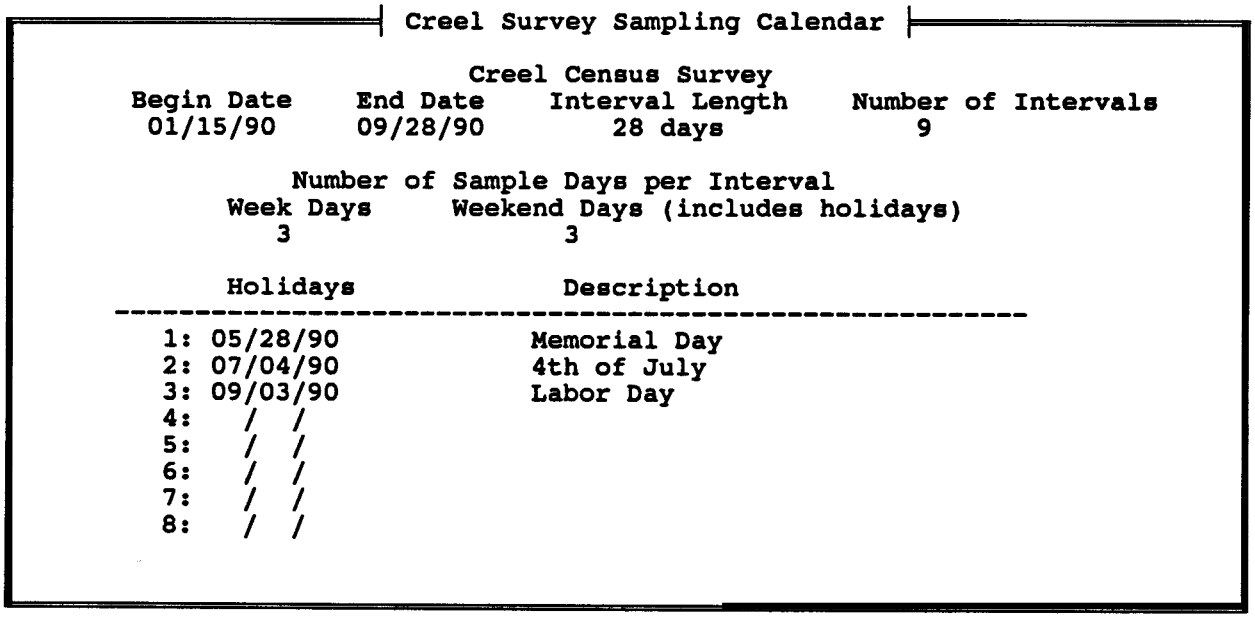
The user can exit from the screen at any time by pressing <ESC> but no information will be saved.

When all the information is entered and the probabilities sum to 1.00, the information is saved and the program exits to the Survey Definition screen. The program will use this information in the calculations **only** if the user chose nonuniform sampling for day periods in the Survey Definition.

2.33 - Sampling Calendar

This section creates a sampling calendar with days chosen at random and section and day periods chosen at random uniformly or nonuniformly. The calendar can be displayed and printed. The calendar also can display any month of any year.

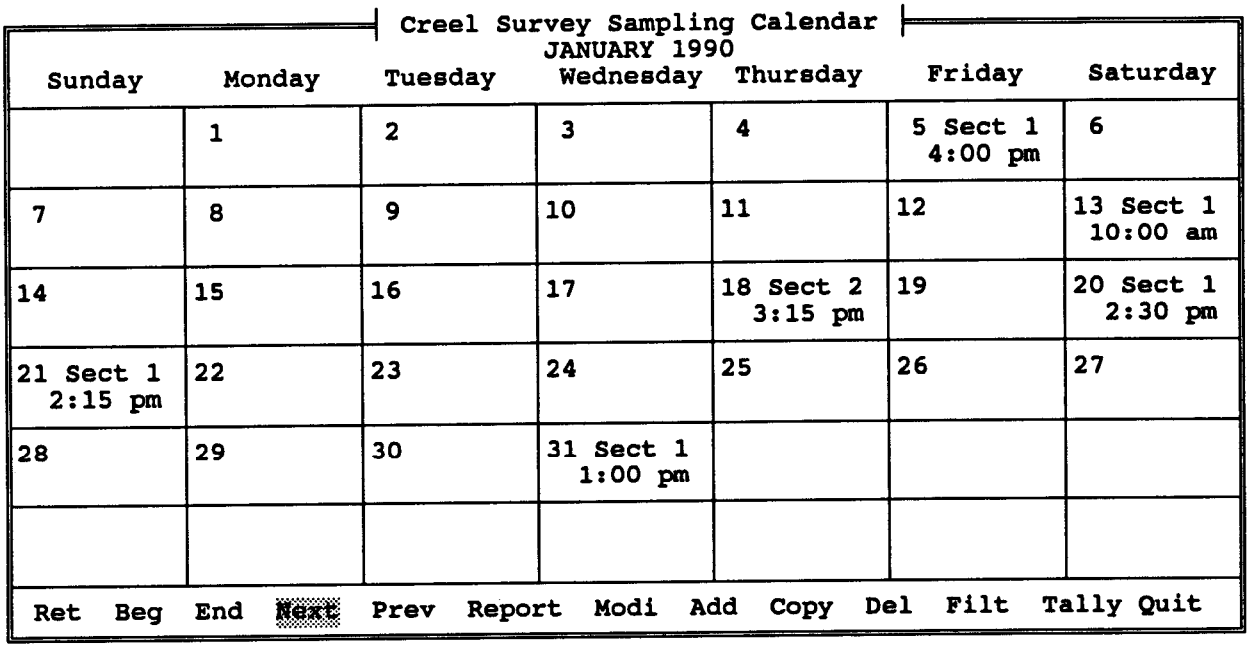
Select "5. Sampling Calendar" from the Survey Definition Menu by moving the light bar with the arrow keys or mouse and pressing < Enter> . The following screen will appear:



The beginning and ending dates, interval length and number of intervals are from the survey definition and are displayed for your information. Enter the number of days to be sampled for week days and weekend days. Holidays are included with weekend days rather than weekdays when the system chooses sampling days. The user can change or delete the three default holidays by typing over them. It is possible to add five more holidays such as Derby Days or the 1st day of fishing season. Press < Ctrl > < Enter> when finished or to exit from this screen. If <Esc> is pressed, the program will also exit from this screen but will save no changes to the data.

The program then chooses the sample days at random for each interval and strata (weekdays and weekend days). The section of the body of water to sample, the day period to sample and the sampling start time are chosen at random using the number of sections and day periods in the survey definition, either uniformly or nonuniformly. If uniform sampling is used, the program assumes the day begins at 6 a.m. No start time will fall within the last hour of the day. The system divides the day length in the interval definitions by the number of day periods in the survey definition. The program choses a time at random from the first period and the rest of the sampling times fall an equal distance into the other periods. If nonuniform sampling was selected in the survey definition and probabilities were entered for sections and day periods, these probabilities are used in randomly selecting the sampling periods. The system chooses a day period to sample nonuniformly. Then the system chooses a start time at random from that period. No start time will fall within the last hour of a period.

These calculations take only a short time and when they are finished the following screen will appear:



The first month of the survey sampling period is displayed. Select "Next" to display the next month, "Prev" to display the prior month, "Beg" to display the first month of the sampling period, "End" to display the last month of the sampling period. When the user selects "Ret", a small window appears in which to enter the desired month. That month will be displayed. The user can "retrieve" any month of any year. <Page UP> displays the same month of the prior year. <Page Down> displays the same month of the next year. When "Report" is selected, a report is printed that includes each month of the sampling period with the selected sample days, similar to the following:

Date: 07/17/92 Idaho Department of Fish and Game Time: 2:08:24 pm

Creel Survey System

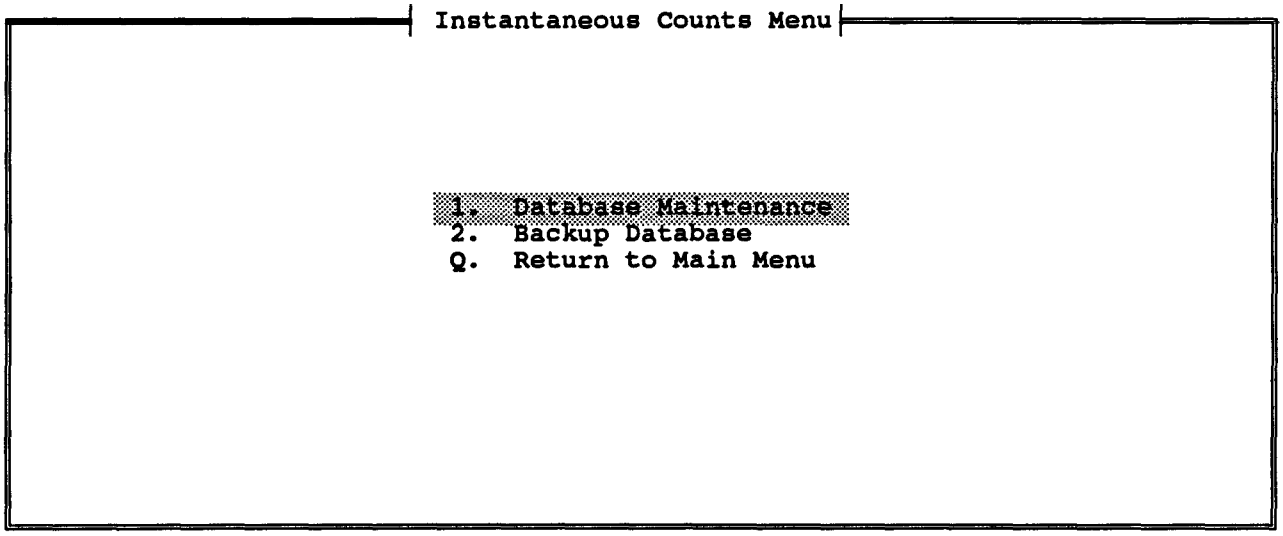
Sampling Calendar

JANUARY 1990

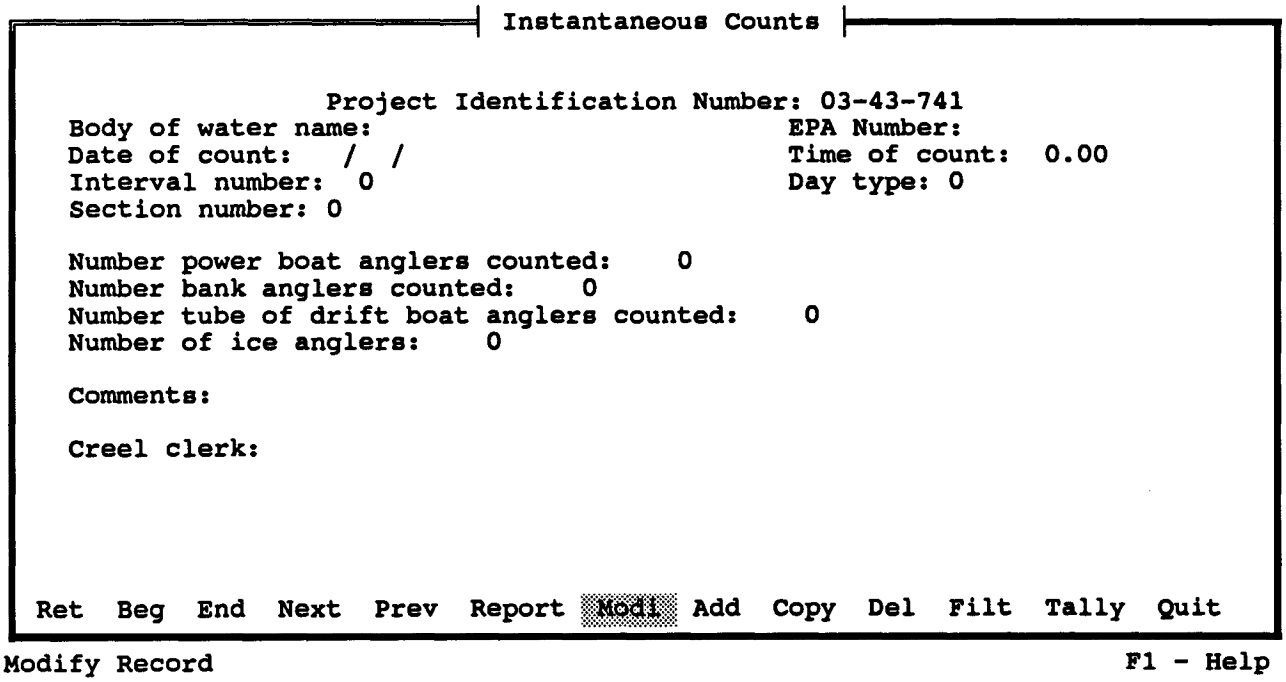
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5 Sect 1 4:00 pm	6
7	8	9	10	11	12	13 Sect 1 10:00 am
14	15	16	17	18 Sect 2 3:15 pm	19	20 Sect 1 2:30 pm
21 Sect 1 2:15 pm	22	23	24	25	26	27
28	29	30	31 Sect 1 1:00 pm			

2.4 - Instantaneous Counts

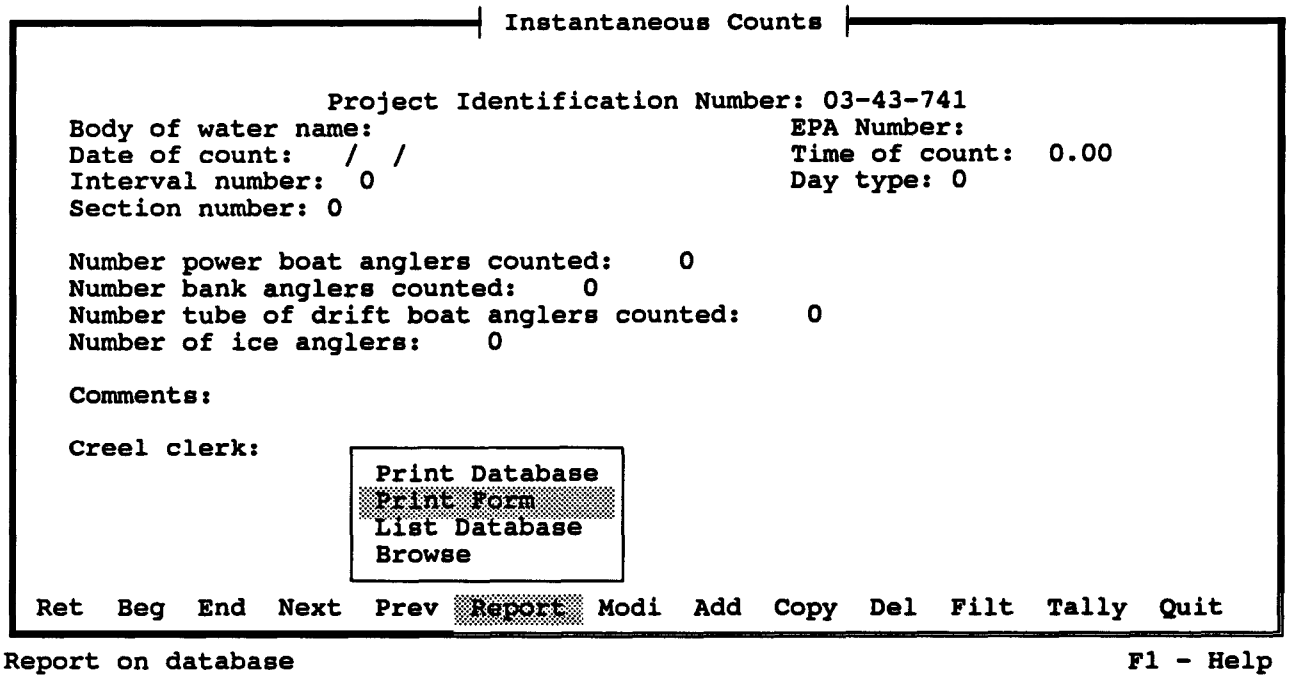
This section stores the instantaneous counts of boat, bank, tube and ice angler data. Select "2. Instantaneous Counts..." and the following screen will appear:



Select "1. Database Maintenance".



To print a field form for data gathering and entry, select "Report" and then "Print Form."



A form will be printed for gathering data:

Date: 09/14/91 Time: 2:58:48 pm

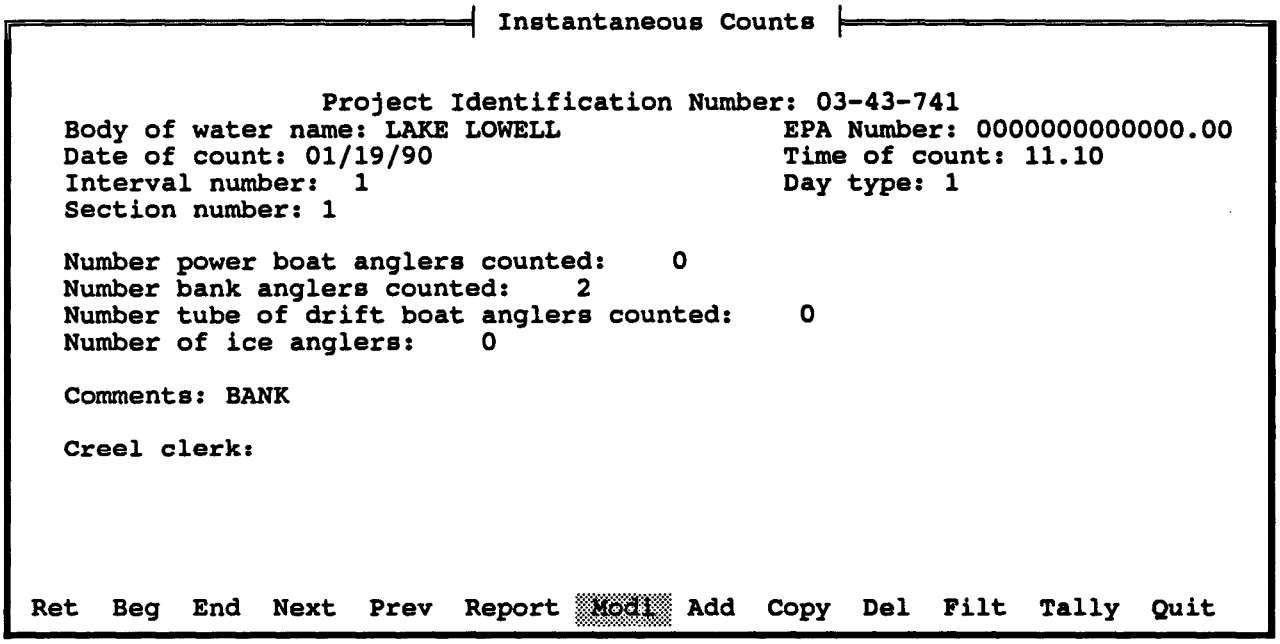
Idaho Department of Fish and Game
Creel Survey System
Instantaneous Counts
Raw Data

Body of Water: LAKE LOWELL EPA Number: 0000000000000.00

BOAT ANGLERS	BANK ANGLERS	TUBE ANGLERS	ICE ANGLERS	SECTION	DATE	TIME	CLERK	COMMENTS

After data has been gathered, select "Add" to enter the data. The system fills in the fields for water name and EPA number from the survey definition. After the first record is entered, the system fills in several other fields. To change this information, type the correct

data and press < Enter> . The fields presented first are the ones most likely to require entry. Interval and day code are calculated from the date and listed holidays. When all the fields display the correct information (except interval and day code which may not have been calculated yet) press <Ctrl> <Enter> to save the record. After data has been entered, the screen should look something like this:



Caution: "Add" must be selected for each NEW count!

The following are guidelines for entering Instantaneous Counts data:

- **Project** Identification **Number: Filled in** automatically **from the survey definition.**
- **Body of water name: Filled in** automatically **from the survey definition.**
- **EPA Number: Filled in** automatically **from the survey definition.**
- **Date of count: Filled in** automatically **from the previous entry (if there is one). To change, type** correct **date and press < Enter > . Must be between the beginning and ending dates in the survey definition.**
- **Time of count: The time of day of the count using a 24 hour clock. Entry not required.**
- ***Interval Number: Range - 1 to number in survey definition.**
  Calculated from the date and filled in automatically.
- **Day type: Range - 1 to number in survey definition.**
  Calculated from the date and holiday list and filled in automatically.
- Section **number: Range - 1 to number in survey definition.**
  Geographic section of body of water. Filled in automatically **from the previous entry. To change, type the** correct **number and press < Enter> .**
- **Number power boats or power boat anglers counted: Range - 1 to 5000**
  Enter number of boat anglers counted if Boat Counts Used: = N in survey definition.
  Enter number of boats counted if Boat Counts Used: = Y in survey definition. In this case

the average number of anglers per boat is calculated from the angler interview data and applied to this number. This option cannot be used unless there is also angler interview data entered.

•Number bank anglers counted: Range - 1 to 5000
Automatically filled in with zero. To change, type correct number and press <Enter>.

•Number of tube drift boat anglers counted: Range - 1 to 5000
Automatically filled in with zero. To change, type correct number and press <Enter>.

•Number of ice anglers: Range - 1 to 5000
Automatically filled in with zero. To change, type correct number and press <Enter>.

•Comments: Informational. Entry not required.

•Creel clerk: Informational. Entry not required.

To print the contents of the database, select "Report", "Print Database". The following report will be generated:

Date: 09/14/91 Time: 2:58:11 pm
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Instantaneous Counts
Raw Data

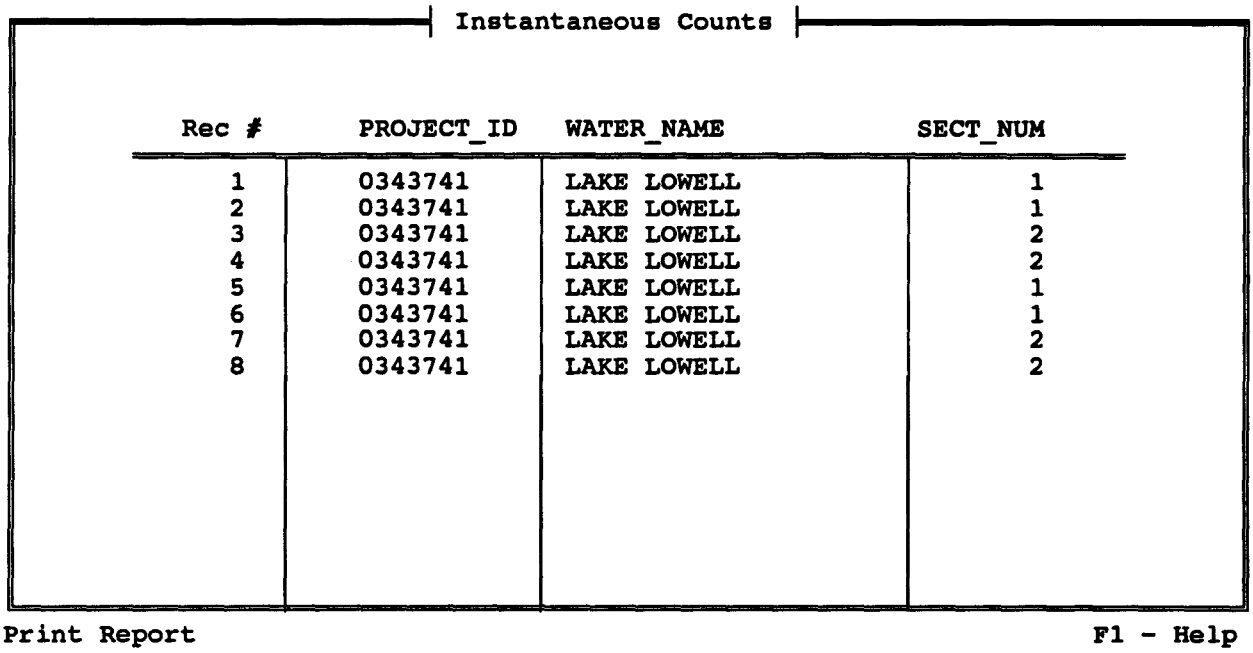
Body of Water: LAKE LOWELL EPA Number: 0000000000000.00

SECTION	DATE	INTERVAL	DAY TYPE	TIME	BOAT ANGLERS	BANK ANGLERS	TUBE ANGLERS	ICE ANGLERS
1	01/19/90	1	1	11.10	0	0	0	0
1	01/19/90	1	1	11.21	0	0	0	0
1	01/19/90	1	1	10.55	0	0	0	0
1	01/19/90	1	1	11.35	0	0	0	0
1	01/19/90	1	1	10.43	0	0	0	0
1	01/19/90	1	1	11.41	0	0	0	0
1	01/20/90	1	2	12.00	0	0	0	0
1	01/20/90	1	2	12.00	0	0	0	0
1	01/20/90	1	2	12.00	0	0	0	0
1	01/21/90	1	2	14.34	0	0	0	0
1	01/21/90	1	2	14.39	0	0	0	0
1	01/21/90	1	2	14.55	0	0	0	0
1	02/06/90	1	1	16.00	0	0	0	0
1	02/06/90	1	1	15.00	0	0	0	0
1	02/10/90	1	2	11.30	0	0	0	0
1	02/10/90	1	2	16.30	0	0	0	0
1	02/10/90	1	2	11.30	0	0	0	0
1	02/10/90	1	2	16.30	0	4	0	0
1	02/10/90	1	2	11.30	0	0	0	0

There are two other formats in which to print or view this data. From the menu at the bottom of the screen choose "Report," then "List Database" from the small window that will appear. The user can choose to have the data sent to the printer or the screen. If it is printed, the report will be similar to the following:

RECORD	WATER NAME	SECT	INT	DC	TIMEDAY	DATE	CNT	BOATANG	BANKANG	TUBEANG	ICEANG
1	LAKE LOWELL	1	1	1	0.00	02/01/91		0	0	0	0
2	LAKE LOWELL	1	1	1	0.00	02/02/91		0	0	0	0
3	LAKE LOWELL	2	1	1	0.00	02/01/91		0	0	0	0
4	LAKE LOWELL	2	1	1	0.00	02/02/91		0	0	0	0
5	LAKE LOWELL	1	1	2	0.00	02/05/91		0	0	0	0
6	LAKE LOWELL	2	1	2	0.00	02/05/91		0	0	0	0
7	LAKE LOWELL	1	2	1	0.00	03/01/91		0	0	0	0
8	LAKE LOWELL	2	2	1	0.00	03/07/91		0	0	0	0

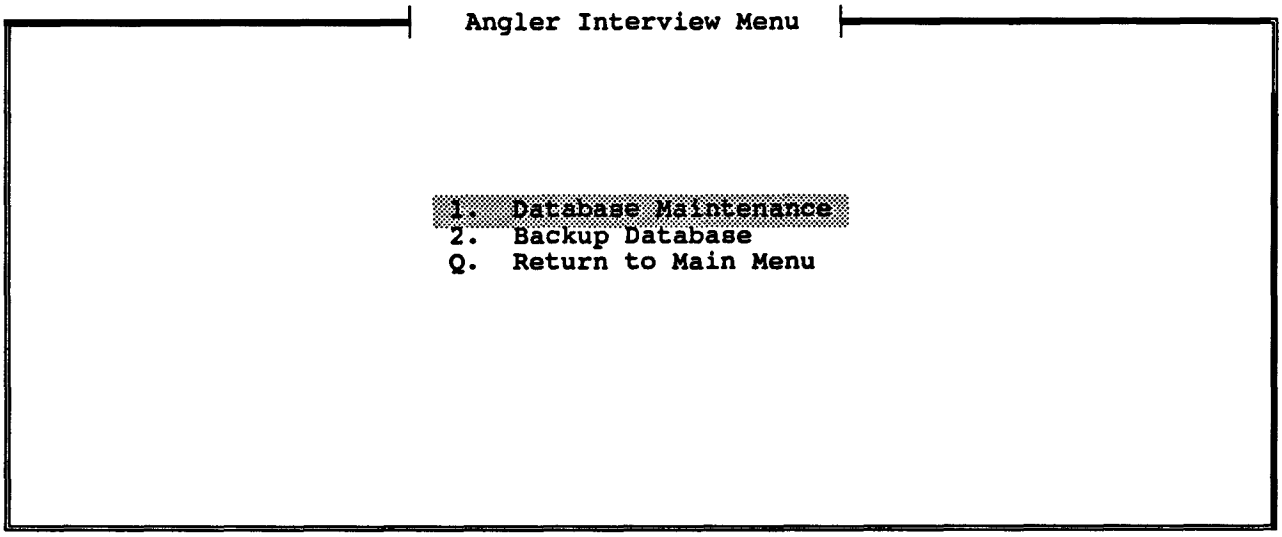
Or, from the menu at the bottom of the screen, choose "Report," then "Browse." A screen similar to the following will appear:



There are other fields to the left which are not visible. Use the arrow keys to move around the screen. The up and down arrows move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up showing the next record. **<PAGE** UP> and **<PAGE** DOWN> will display the next or previous screen full of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible on the screen. Press **<ESC>** to exit. The mouse is **not supported** in **"Browse."**

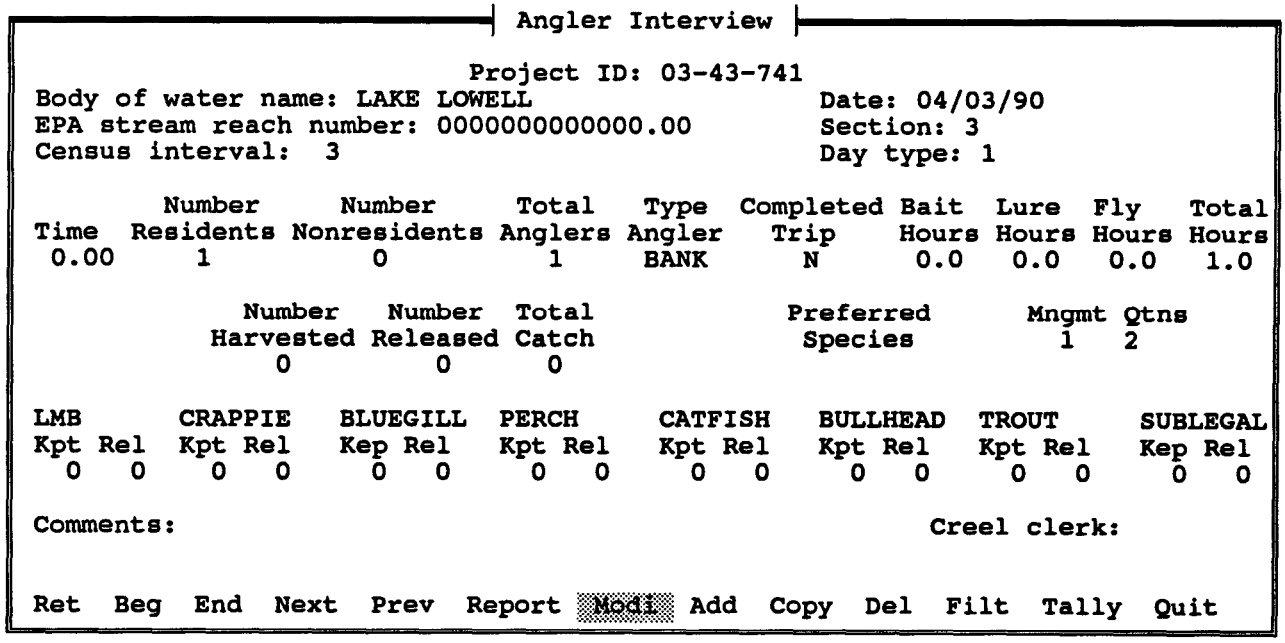
2.5 - Angler Interview

Use this section for entering and storing angler interview data. From the Main Menu select "3. Angler Interview." The following screen will appear:

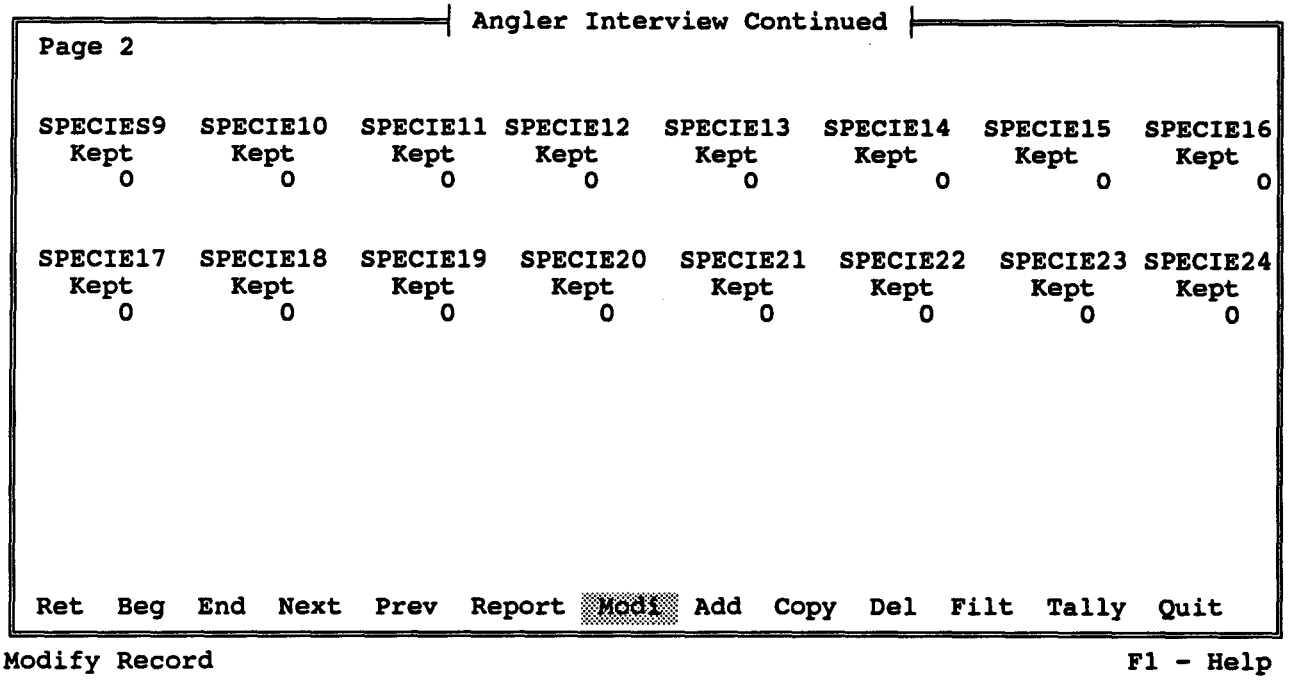


Edit Database

Now select "1. Database Maintenance." The data entry screen for angler interviews works the same as for the Instantaneous counts. After data has been gathered, select "Add" to enter the data. The system fills in the fields for water name and EPA number from the survey definition. After the first record is entered, the system fills in several other fields. To change them, type the correct information and press <Enter> . The system calculates the interval and day code from the date and listed holidays. The fields presented first are the ones most likely to require entry. When all the fields display the correct information (except interval and day code which may not have been calculated yet) press <Ctrl> <Enter> to save the dta. After data has been entered, the screen will look something like this:



If the user listed more than eight species in the survey definition, the following screen will appear when "PgDn" is selected.



Caution: The user must select "Add" for each NEW interview!

The following are guidelines for entering Angler Interview data:

•Project ID: Filled in automatically from the survey definition.

•Body of water name: Filled in automatically from the survey definition.

•EPA stream reach number: Filled in automatically from the survey definition.

***Date:** Filled in automatically from the previous entry (if there is one). To change, type the correct number and press < Enter> . Must be between the beginning and ending dates in the survey definition.

***Section:** Range - 1 to number in survey definition.
Geographic section. Filled in automatically from the previous entry (if there is one). To change, type the correct number and press < Enter> .

***Census interval:** Range - 1 to number in survey definition.
Interval. Calculated from the date and filled in automatically.

***Day type:** Range - 1 to number in survey definition.
Calculated from the date and holiday list and filled in automatically.

***Time:** Range - 1 to 24
Time of day using 24-hour clock. Entry not required.

***Number Residents:** Range - 0 to 20 Entry not required.

***Number Nonresidents:** Range - 0 to 20 Entry not required.

***Total Anglers:** Calculated from the number of residents and nonresidents and filled in automatically if their sum is greater than zero. If no entry was made for residents and nonresidents, then an entry here is required.

***Type Angler:** Bank, Boat, Tube, or Ice
Filled in automatically from the previous entry. To change, type correct word and press < Enter> .

***Completed Trip:** Y or N required.

***Bait Hours:** Zero filled in automatically. To change, type correct number and press < Enter> . Entry not required.

***Lure Hours:** Zero filled in automatically. To change, type correct number and press < Enter> . Entry not required.

***Fly Hours:** Zero filled in automatically. To change, type correct number and press < Enter> . Entry not required.

***Total Hours:** Calculated from bait, lure and fly hours and filled in automatically if their sum is greater than zero. If not, this field requires an entry.

***Number Harvested:** Zero filled in automatically. To change, type correct number and press < Enter> . Entry not required.

***Number Released:** Zero filled in automatically. To change, type correct number and press < Enter> . Entry not required.

***Total Catch:** Calculated from the number harvested and released and filled in automatically if their sum is greater than zero. If not, this field requires an entry. ***Preferred Species:** The targeted fish species. Used to select records for catch rate calculations on targeted species. Entry not required.

•Mngmt Qtns 1 and 2: Informational. Entry not required.

***Species Kept and Released:** Used to calculate catch rate for individual species. Entry not required.

***Comments and Creel clerk:** Informational. Entry not required.

Select "Report", then "Print Form" to print the field form for data entry. This form requires a wide carriage printer set on condensed print. If your printer isn't wide enough lines will wrap to the next line.

Date: 02/05/93

Time: 9:48:56 am

Idaho Department of Fish and Game
Creel Survey System
Interview Field Form

Body of Water: CROOKED RIVER

EPA Number: 1706030500.3300

DATE:

SCT	TIME	NO. RES	NO. NRES	TYPE ANGLER	TRP CMP	BAIT HOURS	LURE HOURS	FLY HOURS	NO. KEPT	NO. REL.	REFERRED SPECIES	MGT 1	QT 2	W SH >6 KEPT	W SH >6 REL	W SH <6 KEPT	W SH <6 REL	CT KEPT	CT REL	BULLT KEPT	BULLT REL	H SH KEPT	H SH REL	H RB KEPT	H RB REL	MISC KEPT	MISC REL	WF KEPT	WF REL

STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21	SP22	SP23	SP24

SCT	TIME	NO. RES	NO. NRES	TYPE ANGLER	TRP CMP	BAIT HOURS	LURE HOURS	FLY HOURS	NO. KEPT	NO. REL.	REFERRED SPECIES	MGT 1	QT 2	W SH >6 KEPT	W SH >6 REL	W SH <6 KEPT	W SH <6 REL	CT KEPT	CT REL	BULLT KEPT	BULLT REL	H SH KEPT	H SH REL	H RB KEPT	H RB REL	MISC KEPT	MISC REL	WF KEPT	WF REL

STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21	SP22	SP23	SP24

SCT	TIME	NO. RES	NO. NRES	TYPE ANGLER	TRP CMP	BAIT HOURS	LURE HOURS	FLY HOURS	NO. KEPT	NO. REL.	REFERRED SPECIES	MGT 1	QT 2	W SH >6 KEPT	W SH >6 REL	W SH <6 KEPT	W SH <6 REL	CT KEPT	CT REL	BULLT KEPT	BULLT REL	H SH KEPT	H SH REL	H RB KEPT	H RB REL	MISC KEPT	MISC REL	WF KEPT	WF REL

STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21	SP22	SP23	SP24

SCT	TIME	NO. RES	NO. NRES	TYPE ANGLER	TRP CMP	BAIT HOURS	LURE HOURS	FLY HOURS	NO. KEPT	NO. REL.	REFERRED SPECIES	MGT 1	QT 2	W SH >6 KEPT	W SH >6 REL	W SH <6 KEPT	W SH <6 REL	CT KEPT	CT REL	BULLT KEPT	BULLT REL	H SH KEPT	H SH REL	H RB KEPT	H RB REL	MISC KEPT	MISC REL	WF KEPT	WF REL

STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21	SP22	SP23	SP24

After the user has entered survey and interval definitions, instantaneous counts, and angler interviews, the system is ready to produce summary data.

To print the Angler Summary Report, Select "Report", then "Print Summary". This report does not require a wide carriage printer nor condensed print.

```
                        Angler Summary Report
                    Idaho Department of Fish and Game
                                                                  09/14/91
Body of Water: LAKE LOWELL                        EPA Number: 0000000000000.00

                          Angler Composition
                    Total Number of Anglers:     82
                         Percent of resident:  97.90%
                     Percent of non-resident:   2.10%

                     Total Number of Interviews:   15
                   Ave Number Anglers/Intervie:   1.45
                    Percentage of Interviews with --
                            1 angler :  50.00%
                            2 anglers:  20.00%
                            3 anglers:  20.00%
                            4 anglers:   9.00%
                            5 anglers:   1.00%
                           >5 anglers:    .00%

                          Percentage of Anglers:
      Catching:                Releasing:                Harvesting:
           0:  80.59%               0:  71.43%               0:  53.23%
           1:   6.64%               1:   0.00%               1:   8.87%
           2:   3.85%               2:  14.29%               2:  11.29%
           3:   2.80%               3:   0.00%               3:   6.45%
           4:   1.92%               4:   0.00%               4:   8.87%
           5:   0.35%               5:   0.00%               5:   1.61%
more than 6:   3.85%    more than 6:  14.29%               6:   9.68%

              Type of Fishing (from Instantaneous Counts)
                            Boat:  47.66%
                            Bank:  52.34%
                            Tube:   0.00%
                             Ice:   0.00%

                          Method of Fishing
                            Bait:   0.00%
                            Lure:   0.00%
                             Fly:   0.00%

                          Catch Composition
                 LMB:  10.49%        CRAPPIE:  44.06%
           BLUEGILL:  14.16%          PERCH:   1.92%
            CATFISH:   6.82%       BULLHEAD:   8.57%
              TROUT:   8.39%       SUBLEGAL:   5.59%

                Number of Completed trips:      63
                     Average Trip Length:    2.66

                          Management Questioins
              Total Number of Responses to Question 1: 15
              Total Number of Responses to Question 2: 13
```

Percentage of Responses to Questions

Question 1		Question 2	
A :	**50.00%**	**2**	**20.00%**
B :	**25.00%**	1 :	**40.00%**
NY:	**25.00%**	D :	**20.00%**
		7 :	**20.00%**

Up to ninty-nine different responses to each management question are **possible** and calculations on the percentage of each will be done but only fifteen will be printed.

It is possible to print other reports. Select "Report" from the menu at the bottom of the screen, then "Print Database" and a report similar to the following will be printed (it requires a wide carriage printer set on condensed print):

Date: 02/05/93
Time: 9:40:41 am
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Interview Field Form
Raw Data

Body of Water: CROOKED RIVER

EPA Number: 1706030500.3300

SC	INT	DY CD	DATE	TIME	TYPE ANGL	TRIP COMP	NO. RES	NO. NRES	TOTAL NO. ANG	BAIT HRS	LURE HRS	FLY HRS	TOTAL HOURS FISHED	NO. FISH KEPT	NO. FISH REL.	TOTAL CATCH	NUMBER W SH >6 KPT	NUMBER W SH >6 REL	NUMBER W SH <6 KPT	NUMBER W SH <6 REL	NUMBER CT KPT	NUMBER CT REL	NUMBER BULLT KPT	NUMBER BULLT REL	NUMBER H SH KPT	NUMBER H SH REL	NUMBER H RB KPT	NUMBER H RB REL
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	10.45	BANK	N	1	0	1	2.0	0.0	0.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	2	05/23/92	14.09	BANK	N	1	0	1	0.0	3.0	0.0	3.0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
1	1	2	05/23/92	14.20	BANK	N	1	0	1	1.0	0.0	0.0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	2	05/23/92	14.30	BANK	N	1	0	1	3.0	0.0	0.0	3.0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0
2	1	2	05/23/92	14.30	BANK	N	1	0	1	3.0	0.0	0.0	3.0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
2	1	2	05/23/92	14.30	BANK	N	1	0	1	3.0	0.0	0.0	3.0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
2	1	2	05/23/92	14.30	BANK	N	1	0	1	3.0	0.0	0.0	3.0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	16.00	BANK	Y	1	0	1	0.0	0.0	1.0	1.0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	16.10	BANK	N	1	0	1	0.0	1.0	0.0	1.0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/23/92	15.10	BANK	Y	1	0	1	1.0	0.0	0.0	1.0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0
3	1	2	05/23/92	15.10	BANK	Y	1	0	1	1.0	0.0	0.0	1.0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/25/92	8.02	BANK	N	1	0	1	0.0	1.0	0.0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	2	05/25/92	8.46	BANK	N	1	0	1	1.5	0.0	0.0	1.5	5	13	18	4	0	0	0	0	0	0	0	0	0	1	0
1	1	2	05/25/92	8.46	BANK	N	1	0	1	1.5	0.0	0.0	1.5	5	12	17	4	0	0	0	1	0	0	0	0	0	0	0
3	1	2	05/25/92	9.46	BANK	N	1	0	1	0.0	0.1	0.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	2	05/25/92	9.08	BANK	N	1	0	1	0.0	0.0	1.0	1.0	2	21	23	0	0	0	0	0	0	0	0	0	0	2	0
4	1	2	05/25/92	10.10	BANK	N	1	0	1	0.0	0.0	1.0	1.0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
2	1	2	05/25/92	10.52	BANK	N	1	0	1	1.0	0.0	0.0	1.0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0
2	1	2	05/25/92	11.20	BANK	Y	1	0	1	1.0	0.0	0.0	1.0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
2	1	2	05/25/92	11.20	BANK	Y	1	0	1	1.0	0.0	0.0	1.0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	05/27/92	13.32	BANK	N	1	0	1	1.0	0.0	0.0	1.0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0
1	1	2	05/30/92	12.40	BANK	N	1	0	1	2.0	0.0	0.0	2.0	1	30	31	1	0	0	0	0	0	0	0	0	0	0	0
1	1	2	05/30/92	13.01	BANK	N	0	1	1	0.0	0.0	3.0	3.0	2	50	52	0	0	0	0	1	0	1	0	0	0	0	0
1	1	2	05/30/92	16.35	BANK	Y	1	0	1	3.0	0.0	0.0	3.0	4	16	20	4	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/30/92	17.15	BANK	N	1	0	1	0.0	0.0	0.3	0.3	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
3	1	2	05/30/92	17.40	BANK	Y	1	0	1	2.0	0.0	0.0	2.0	3	4	7	0	0	0	0	2	0	0	0	0	0	0	0
3	2	2	06/07/92	10.26	BANK	N	1	0	1	0.0	0.0	0.2	0.2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	06/07/92	12.34	BANK	Y	1	0	1	0.0	0.8	0.0	0.8	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
3	2	1	06/12/92	16.50	BANK	N	0	1	1	0.3	0.0	0.0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	1	06/12/92	16.50	BANK	N	0	1	1	0.0	0.3	0.0	0.3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
3	2	1	06/12/92	16.50	BANK	N	1	0	1	0.0	0.3	0.0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

End of Report.

This report will not contain the information entered concerning species nine through twenty-four. To print this information, choose "Report," then "Report on Species 9 - 24". A report similar to the following will be printed:

Date: 02/05/93 Time: 9:45:02 am
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Interview Field Form
Raw Data: Species 9 - 24

Body of Water: CROOKED RIVER EPA Number: 1706030500.3300

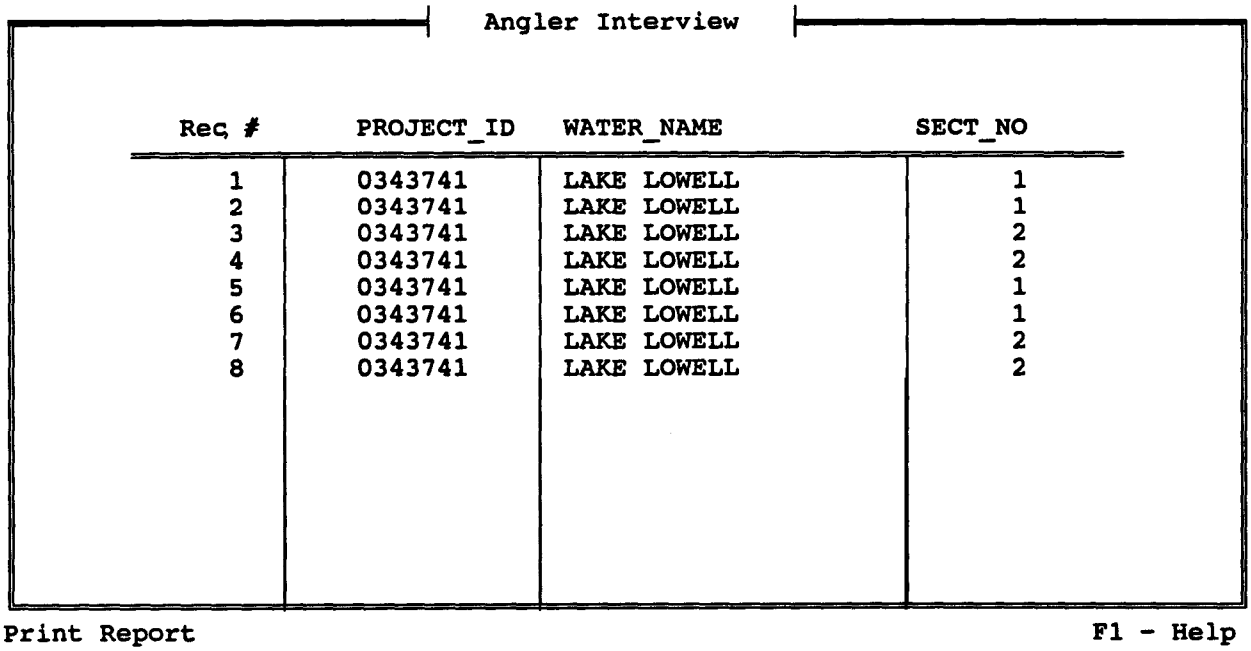
SECT	INT	DAYCODE	DATE	STHD KEPT	SP10 KEPT	SP11 KEPT	SP12 KEPT	SP13 KEPT	SP14 KEPT	SP15 KEPT	SP16 KEPT	SP17 KEPT	SP18 KEPT	SP19 KEPT	SP20 KEPT	SP21 KEPT	SP22 KEPT	SP23
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/23/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	05/25/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	1	05/27/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/30/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/30/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	2	05/30/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/30/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	2	05/30/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	2	2	06/07/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	2	2	06/07/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	2	1	06/12/92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

End of Report.

Select "Report," then "List Database" to display a list of the data on the screen or printer. If "print report" is chosen, a report similar to the following will be printed (this too requires a wide carriage printer set on condensed print):

RECORD	WATER_NAME	SEC	EPA_NUMBER	INT	DYCD	TIMEDAY	TYPE	COM	DATE_INTER	NO_RES	NO_NRES	NO_ANGLER	HOURS	BAIT_HR	LURE_HRS	FLY_HRS	NO_HARV	NO_REL	CATCH
1	LAKE CHARY	1	1234	1	1	0.00	BANK	Y	02/04/91	3	0	3	3.0	2.0	0.0	1.0	2	2	4
4	LAKE CHARY	1	1234	1	1	1.00	BANK	Y	02/04/91	2	0	2	4.0	4.0	0.0	0.0	2	3	5
15	LAKE CHARY	1	1234	1	1	0.00	BANK	Y	02/04/91	9	9	18	4.0	4.0	0.0	0.0	9	9	18
12	LAKE CHARY	2	1234	1	1	0.00	BANK	Y	02/22/91	4	0	4	8.0	4.0	0.0	4.0	4	0	4
2	LAKE CHARY	1	1234	2	1	0.00	BOAT	N	03/01/91	1	3	4	6.0	6.0	0.0	0.0	2	0	2
6	LAKE CHARY	2	1234	2	1	0.00	BANK	Y	03/01/91	2	2	4	7.0	0.0	7.0	0.0	6	1	7
10	LAKE CHARY	2	1234	2	2	9.00	BANK	Y	03/02/91	3	0	3	7.0	7.0	0.0	0.0	2	0	2
11	LAKE CHARY	2	1234	2	2	8.00	BANK	N	03/02/91	4	0	4	9.0	9.0	0.0	0.0	3	1	4
8	LAKE CHARY	2	1234	2	1	0.00	BANK	N	03/12/91	3	0	3	1.0	1.0	0.0	0.0	4	0	4
9	LAKE CHARY	2	1234	2	1	14.00	BANK	Y	03/12/91	2	2	4	3.5	2.5	1.0	0.0	3	0	3
7	LAKE CHARY	2	1234	3	1	0.00	BANK	N	03/29/91	4	0	4	8.0	7.0	0.0	1.0	4	0	4
3	LAKE CHARY	1	1234	3	1	0.00	BOAT	Y	03/30/91	4	0	4	7.0	0.0	7.0	0.0	4	0	4
5	LAKE CHARY	1	1234	4	1	0.00	BOAT	Y	04/27/91	3	0	3	6.0	0.0	6.0	0.0	3	0	3
13	LAKE CHARY	1	1234	4	2	0.00	BOAT	Y	04/27/91	2	2	4	2.0	2.0	0.0	0.0	2	0	2
14	LAKE CHARY	1	1234	4	2	0.00	BOAT	Y	04/27/91	9	9	18	4.0	4.0	0.0	0.0	0	9	9

Select "Report," then "Browse" to list the data on the screen in columns. A screen will appear similar to the following:

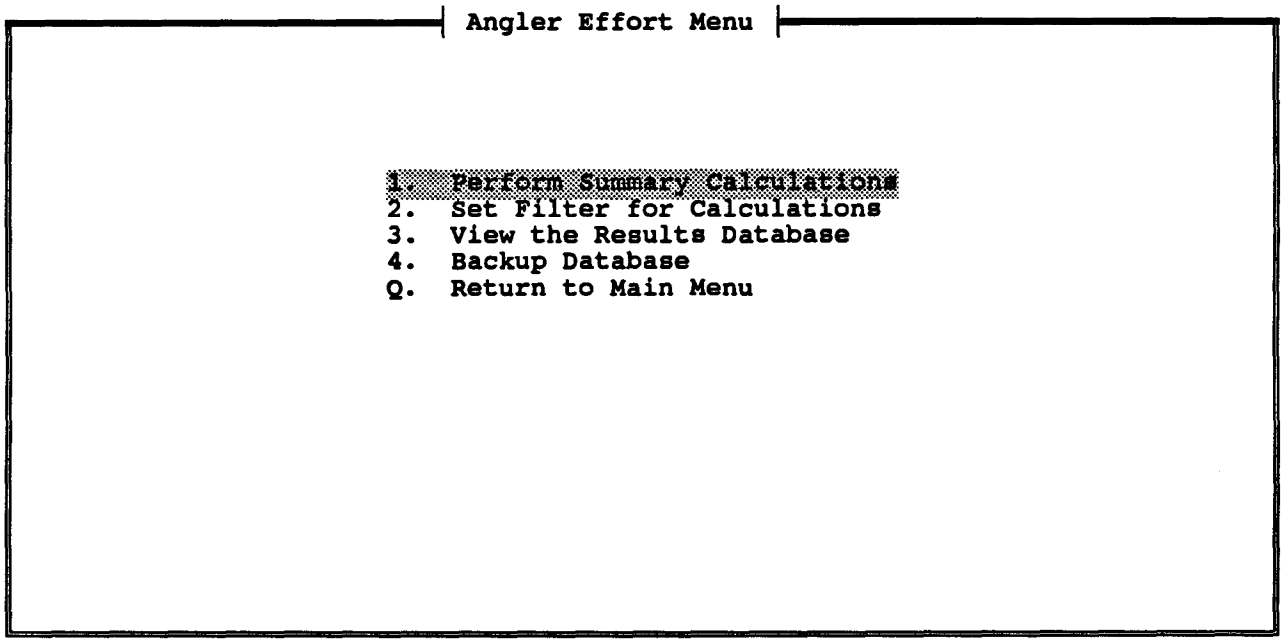


There are other fields to the left which are not visible. Use the arrow keys to move around the screen. The up and down arrows moves the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up to show the next record. **<PAGE** UP> and **<PAGE** DOWN> display the next **or previous** screen of **records.** The left **and** right **arrows move** sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The mouse is not supported in "Browse."

2.6 - Effort Estimates

The program calculates the effort estimates using the average number of anglers from the instantaneous counts and the average number of hours available for fishing from the interval definitions. This information must have been entered before these calculations can be done. If boat counts are used, the program calculates the average number of anglers per boat from the angler interview data and the average number of boats. Angler interview data must have been entered before these calculations can be done .

From the Main Menu select "4. Effort Estimates."



To run the calculations, select "1. Perform Summary Calculations." These calculations will not have to be done again unless data is changed in the Survey Definition, Interval Definitions, Instantaneous counts, or Angler Interviews, or the user installs a new version of the Creel Census System. NOTE: If using a new Creel Census System version, please rerun the calculations. It is not possible to view the results database until after the calculations have been run.

The calculations for effort estimates use the following statistical method:

P = *Fishing pressure in man hours per day*
c_i = *Fisherman count (instant)*
C = *Total fishermen in the interval*
h_i = *Mean number of daylight hours for the interval*
D = *Number of days of that day type in the interval*
H = *Total hours for the interval*
n = *Number of instantaneous counts*
p_S = *Probability for the section (= 1.00 if uniform sampling used)*
p_P = *Probability for the day period (= 1.00 if uniform sampling used)*
S_P^2 = *Standard error squared of the mean fisherman count expanded(variance)*
a_i = *Number of anglers for the ith angler interview of boat anglers*
n_A = *Number of angler interviews of boat anglers*
$\bar{A}$ = *Mean number of anglers per boat (angler interviews)*
A_P^2 = *Standard error squared of the mean anglers per boat*

Summary Data;

$$C = \sum_i^n \frac{c_i}{p_S * p_P} \qquad C^2 = \sum_i^n \left(\frac{c_i}{p_S * p_P}\right)^2 \qquad \bar{C} = \frac{C}{n} \qquad H = h_i * D$$

Effort or Pressure;

$$P = \bar{C} * H$$

Variance;

$$S_P^2 = \frac{1}{n(n-1)}\left(C^2 - \frac{(C)^2}{n}\right)H^2$$

If boat counts are used;

$$\bar{A} = \frac{\sum_i^n a_i}{n_A} \qquad A^2 = \sum_i^n a_i^2 \qquad A_P^2 = \frac{1}{n_A(n_A-1)}\left(A^2 - \frac{(A)^2}{n}\right)$$

The pressure becomes;

$$P_{boat} = \bar{C} * \bar{A} * H$$

And the variance becomes;

$$S_{boat}^2 = \left(S_P^2 * \bar{A}^2 + A_P^2 * \bar{C}^2\right)H^2$$

Total Pressure;

$$P_{total} = \left(\bar{C}_{boat} + \bar{C}_{bank} + \bar{C}_{tube} + \bar{C}_{ice}\right)H$$

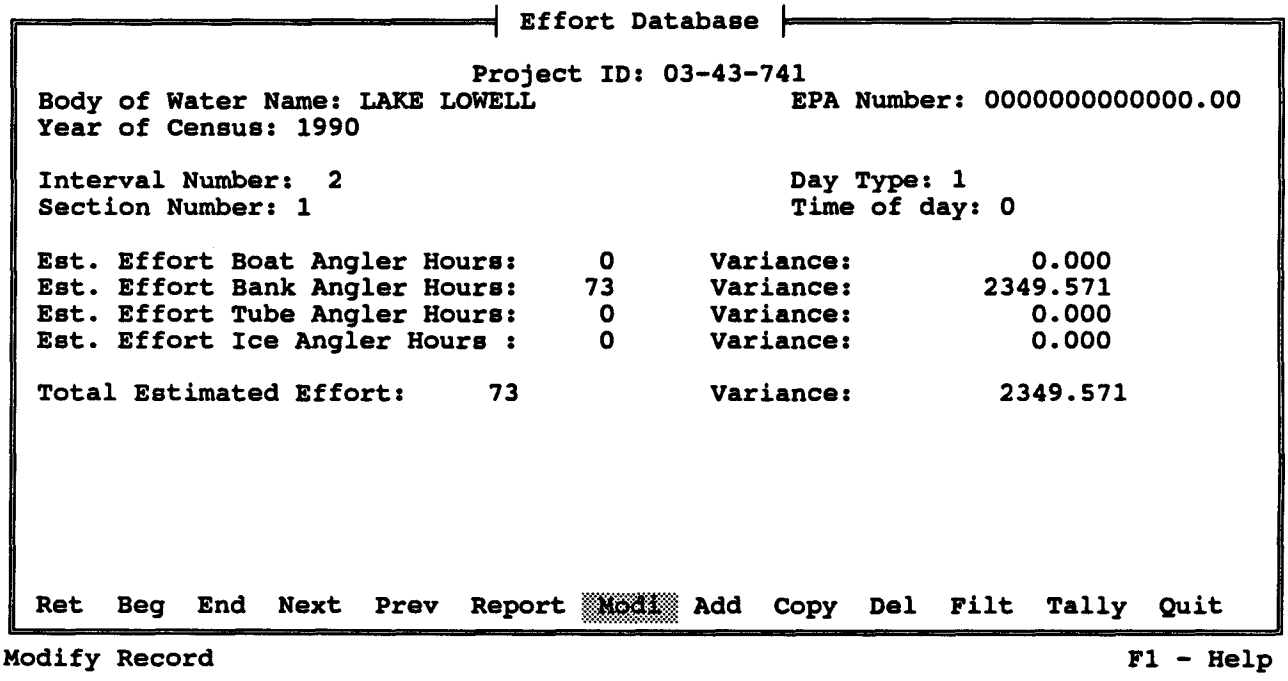
Total Variance;

$$S_{P_{total}}^2 = \left(\frac{S_{P_{boat}}^2}{H^2} + \frac{S_{P_{bank}}^2}{H^2} + \frac{S_{P_{tube}}^2}{H^2} + \frac{S_{P_{ice}}^2}{H^2}\right)H^2$$

The time required to calculate is dependent on the speed of the computer, the number of counts, the number of intervals, and the number of sections. Allow one to ten minutes for the calculations.

The user can use a filter to include only selected records in the calculations. See section 2.62 - Set Filter for Effort Estimates Calculations for an explanation of this feature.

When the calculations are finished, select "View Results Database" from the Angler Effort Menu. The user can view the calculation results, print reports of these results, and apply filters to the results, but cannot edit it, add to it, or delete any of it.



To print a summary of the data, select "Report", then "Print Database." This report will print on an 80-column printer set on regular sized print.

Date: 09/14/91 Time: 3:05:34 pm
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Pressure Report by Interval and Day Type
Summary

Body of Water: LAKE LOWELL EPA Number: 0000000000000.00
1990

SECTION NUMBER	INTERVAL	DAYTYPE	BOAT ANGLERS HOURS	BANK ANGLERS HOURS	TUBE ANGLERS HOURS	ICE ANGLERS HOURS	TOTAL ANGLERS HOURS
1	1	Weekend	0	56	0	0	56
	Interval 1 totals:		0	56	0	0	56
	+/- at 95% C.I.:		0	52	0	0	52
1	2	Weekday	0	73	0	0	73
		Weekend	0	92	0	0	92
	Interval 2 totals:		0	165	0	0	165
	+/- at 95% C.I.:		0	169	0	0	169
1	3	Weekday	0	106	0	0	106
		Weekend	204	1008	0	0	1212
	Interval 3 totals:		204	1114	0	0	1318
	+/- at 95% C.I.:		151	482	0	0	505
1	4	Weekday	550	596	0	0	1146
		Weekend	220	385	0	0	605
	Interval 4 totals:		770	981	0	0	1751
	+/- at 95% C.I.:		612	838	0	0	1038
1	8	Weekday	310	911	0	0	1221
		Weekend	176	264	0	0	440
	Interval 8 totals:		486	1175	0	0	1661
	+/- at 95% C.I.:		213	304	0	0	371
	Section 1 totals:		1708	5713	0	0	7421
	+/- at 95% C.I.:		720	1331	0	0	1513
	Season totals:		1708	5713	0	0	7421
	+/- at 95% C.I.:		720	1331	0	0	1513

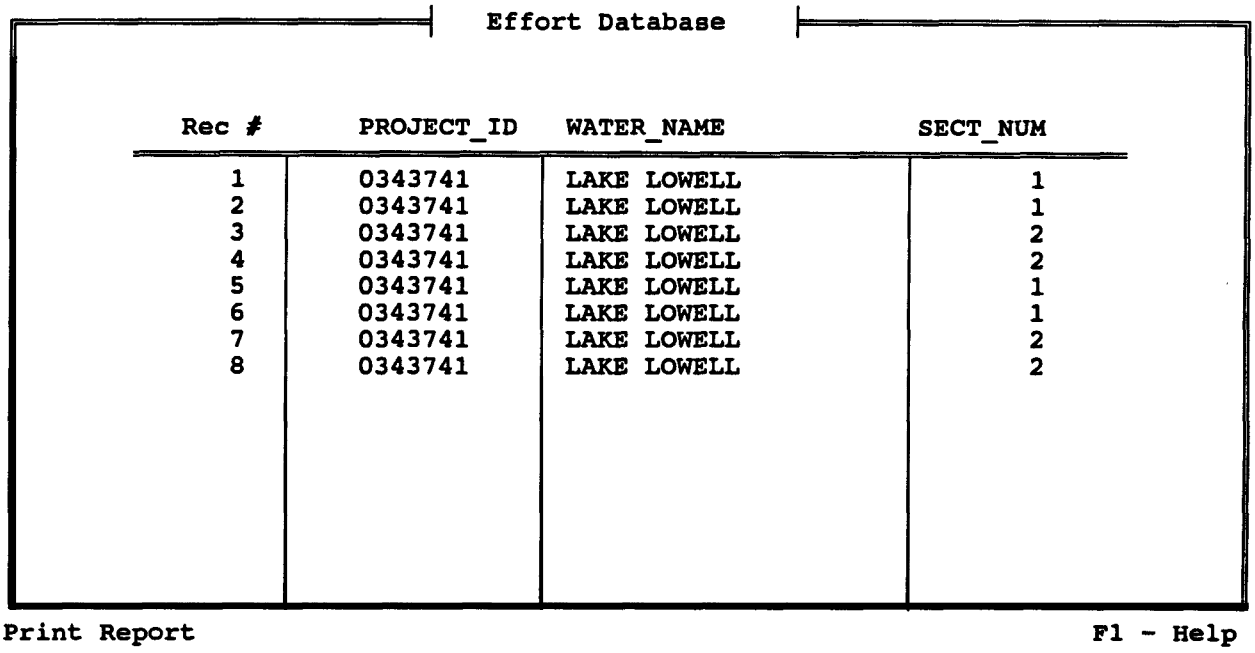
End of Report.

The 95% confidence interval is calculated by multiplying 2 times the square root of the variance of the value (95% C.I. = 2 * sqrt(variance)).

Another format available for print or display is "List." Select "Report" from the menu at the bottom of the screen, then "List Database" from the small window that appears. Choose to print the data or send it to the screen. If printing the data, a report similar to the following will be printed (requires a wide carriage print set on condensed print):

RECORD	WATER_NAME	SEC	EPA_NUMBER	YEAR	INT	DYCD	BOAT	BOAT_VAR	BANK	BANK_VAR	TUBE	TUBE_VAR	ICE	ICE_VAR	TOT_ESTIM	TOT_VAR
1	LAKE CHARY	1	1234	1991	1	1	400	70000	1500	360000	100	10000	100	10000	2100	450000
2	LAKE CHARY	1	1234	1991	1	2	0	0	0	0	0	0	0	0	0	0
3	LAKE CHARY	2	1234	1991	1	1	300	0	1200	0	0	0	0	0	1500	0
4	LAKE CHARY	2	1234	1991	1	2	480	0	360	0	0	0	0	0	840	0
5	LAKE CHARY	1	1234	1991	2	1	720	0	1680	0	0	0	0	0	2400	0
6	LAKE CHARY	1	1234	1991	2	2	0	0	0	0	0	0	0	0	0	0
7	LAKE CHARY	2	1234	1991	2	1	360	129600	960	921600	240	57600	0	0	1560	1108800
8	LAKE CHARY	2	1234	1991	2	2	0	0	0	0	0	0	0	0	0	0
9	LAKE CHARY	1	1234	1991	3	1	120	14400	720	57600	360	129600	480	230400	1680	432000
10	LAKE CHARY	1	1234	1991	3	2	0	0	0	0	0	0	0	0	0	0
11	LAKE CHARY	2	1234	1991	3	1	0	0	1440	0	240	0	0	0	1680	0
12	LAKE CHARY	2	1234	1991	3	2	0	0	0	0	0	0	0	0	0	0
13	LAKE CHARY	1	1234	1991	4	1	0	0	1200	0	0	0	0	0	1200	0
14	LAKE CHARY	1	1234	1991	4	2	0	0	0	0	0	0	0	0	0	0
15	LAKE CHARY	2	1234	1991	4	1	0	0	0	0	0	0	0	0	0	0
16	LAKE CHARY	2	1234	1991	4	2	0	0	0	0	0	0	0	0	0	0

If the user wishes to view the calculation results in table form, select "Report" from the menu at the bottom of the screen, then select "Browse" from the window that appears. The following screen will appear with some fields off the screen to the left.



Use the arrow keys to move through the database. The up and down arrows move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up to show the next record. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The mouse is not supported in "Browse."

The use of the filter is the same as on other data screens. When the user sets a filter, only those records that meet the filter conditions are available to view or print. Other records are "hidden." When the user removes the filter all records again **become** visible. If the user sets a filter and then prints a report, the filter conditions will be printed at the beginning of the report.

If the user wishes to print a summary report for only interval number two for example, select "Filter" from the menu at the bottom of the screen. Then select "Set Filter" from the window that will appear.

Move the cursor down to Interval Number.

Type: 2 <ENTER>

The program asks if it should apply the filter. Select "Y."

The message "Filter On" will appear on the bottom of the screen.

Then select "Report" from the menu at the bottom of the screen.

Select "Print Database" from the window that will appear.

The program includes records from interval 2 only in the report.

Now select "Report" from the menu at the bottom of the screen, then select "List" from the window that appears.

The program asks if it should list to the printer. Select "N."

Selected fields for interval 2 will scroll down the screen. After the screen is full, the program will ask if it should continue. Press "Y" or "N."

<ESC> will **abort the** List and **Reports.**

If the user wishes a report for section 1 and interval 1, select "Filter" from the menu at the bottom of the screen. Then choose "Set Filter" from the window that will appear. Press <F2> to clear the previous filter condition. The program will ask for confirmation. Select "Y."

Move the cursor to Section and enter a 1.

Move the cursor to Interval and enter a 1.

Press **<CTRL><ENTER>.**

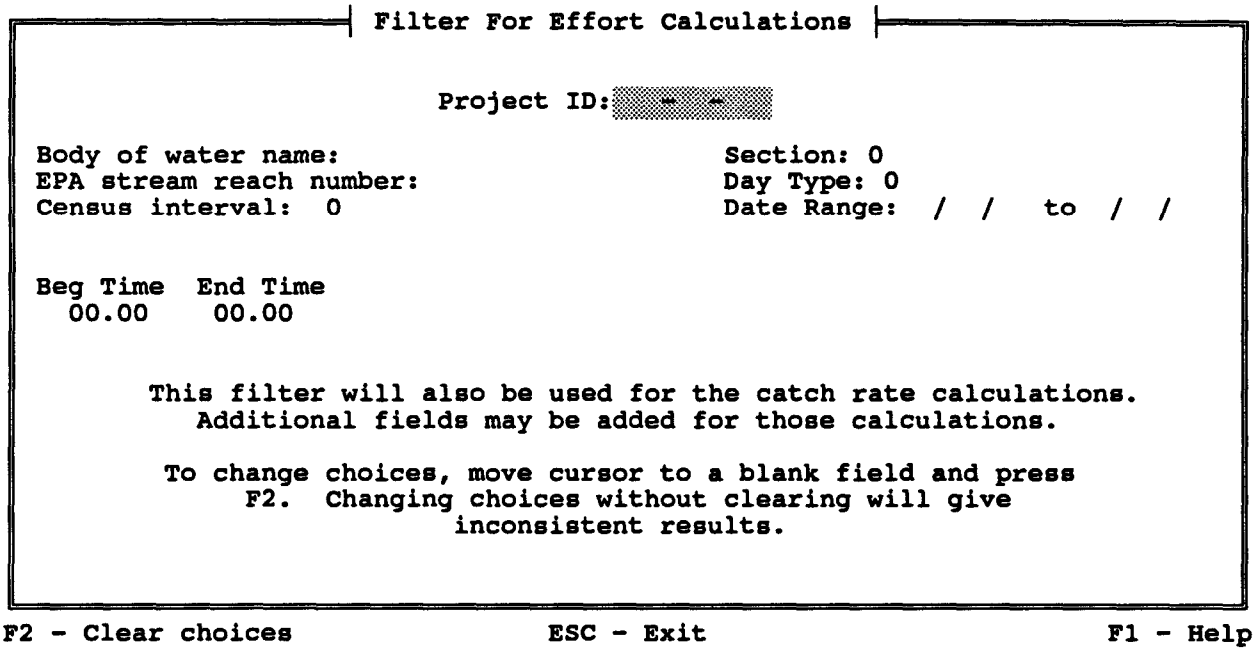
Select "Y" to activate the filter.

With an active filter, only the records with interval 1 and section 1 are visible.

2.62 - Set Filter for Effort Estimates Calculations

This section explains the use of a filter for the calculations. A filter can be set so only selected records are used in the calculations. For example, if effort, catch rate and harvest estimates are needed for a certain period that is different from the intervals previously defined, then a filter can be set so only counts and interviews which were done during that period are included in the calculations.

Select "2. Set Filter for Calculations" from the Angler Effort Menu. The following screen will appear:



With an active filter, the program includes only those records which meet the filter conditions in the effort calculations. Make entries only in those fields which are to used to select records. Do not enter spaces in a field unless you wish records with spaces in that field to be selected.

Date Range can be used singly (only those records with date bigger than 02/05/91 for example) or together (those records with dates between 02/05/91 and 02/28/91). Records with dates equal to the specified dates are not included in the calculations.

Beg Time and End time work similarly. They can be used singly or together, and records with sample time equal to the specified times are not be included.

You can exit from this screen by pressing <ESC> but no entries made will be saved.

This screen sets the filter conditions but does not turn the filter on. After the entries has made, press < Ctrl > < Enter> . The program will exit to the Angler Effort Menu. Choose "1. Perform Summary Calculations." A screen will appear which says "Apply filter now? Y." Press <ENTER> to turn on the filter. A message "Filter On" will appear in the bottom center of your screen.

To clear or change the filter, choose "2. Set Filter for Calculations." After the screen appears, press <F2> to clear the choices after positioning the cursor on a blank field. Changing the choices any other way will give inconsistent results.

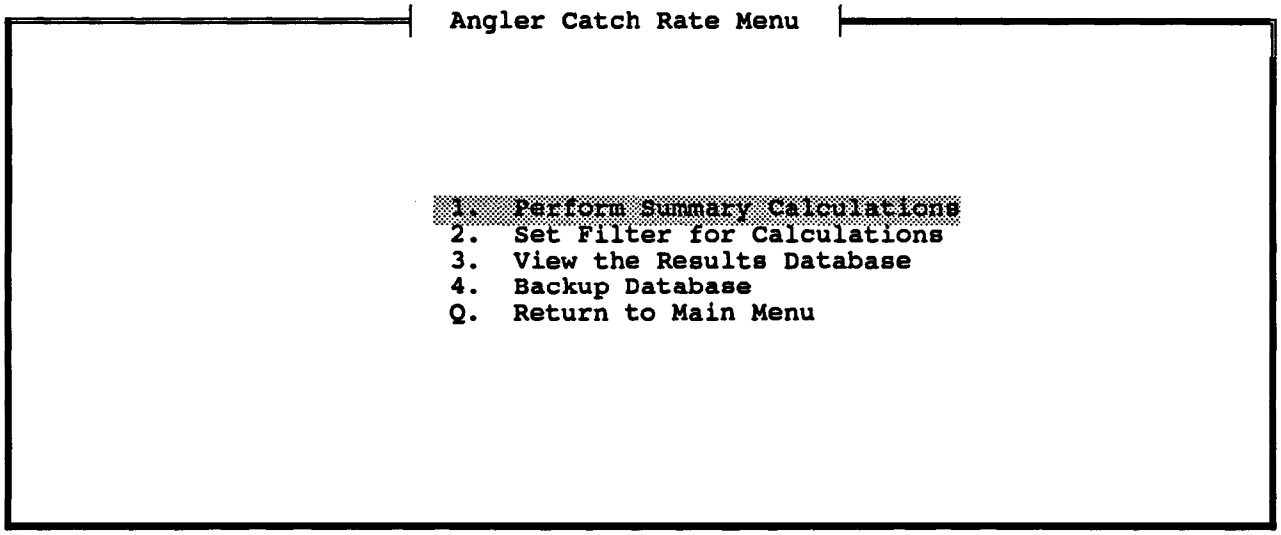
If a filter was set during the effort calculations, this filter will be displayed on the screen during the calculations, and any report generated using the effort results will list the filter conditions.

The same filter conditions used for the effort estimates calculations will automatically be use for the catch rate calculations. The user can add additional fields for those calculations.

2.7 - Catch Rate Database

The system calculates the catch rate estimates using the angler interview data of the number of hours fished and fish caught. This information must have been entered before these calculations can be done.

To perform the Catch Rate calculations, select "5. Catch Rate Estimates" from the Main Menu. From the screen that appears select "1. Perform Summary Calculations."



Perform Catchrate calculations

These calculations will take five to forty minutes. If a filter was set for the effort estimates calculations, that same filter will be used for these calculations. The user can add additional fields to the filter. See section 2.72 Set Filter for Catch Rate Calculations for additional information.

The catch rate calculations use the following statistical method:

h_i = Number of fisherman hours expended by the ith party interviewed H = Total fisherman hours
f = Number of fish (of a given species) caught by the ith party interviewed F = Total fish caught (of a given species)
n _ Number of parties interviewed
CR = Mean catch rate in fish for fisherman hours
Sp = Standard error squared of mean catch
S~ = Standard error squared of the estimated harvest assuming no correlation between fishing pressure and mean catch rate per unit effort S = Standard error squared of mean catch rate (variance)
ps = Section probability (= 1.00 if uniform sampling used)
p_p = Day period probability (= 1.00 if uniform sampling used)

Summary data;

$$F = \sum_i^n \frac{f_i}{p_S * p_P} \qquad F^2 = \sum_i^n \left(\frac{f_i}{p_S * p_P}\right)^2$$

$$H = \sum_i^n \frac{h_i}{p_S * p_P} \qquad H^2 = \sum_i^n \left(\frac{h_i}{p_S * p_P}\right)^2$$

$$(FH)^2 = \sum_i^n \left(\frac{f_i}{p_S * p_P}\right)\left(\frac{h_i}{p_S * p_P}\right)$$

Catch Rate;

$$\bar{CR} = \frac{F}{H} = \frac{\frac{F}{n}}{\frac{H}{n}} = \frac{\bar{F}}{\bar{H}}$$

Variance;

$$S^2_{\bar{CR}} = \bar{CR}^2\left(\frac{S^2_{\bar{F}}}{\bar{F}^2} + \frac{S^2_{\bar{H}}}{\bar{H}^2} + \frac{2Cov(F*H)}{\bar{F}\bar{H}}\right) \quad \textit{where}$$

$$S^2_{\bar{F}} = \frac{1}{n(n-1)}\left(F^2 - \frac{(F)^2}{n}\right) \qquad S^2_{\bar{H}} = \frac{1}{n(n-1)}\left(H^2 - \frac{(H)^2}{n}\right)$$

$$Cov(F*H) = \frac{1}{n(n-1)}\left((FH)^2 - \frac{F*H}{n}\right)$$

When the calculations finish, select "3. View Results Database." The user will see the following screen:

Catch Rate Database

Project ID: 03-43-741

Body of Water Name: LAKE LOWELL — Year of Census: 1990
EPA Stream Reach Number: 0000000000000.00 — Section Number: 3
Interval Number: 3 — Day Type: 2
Time of day: 0

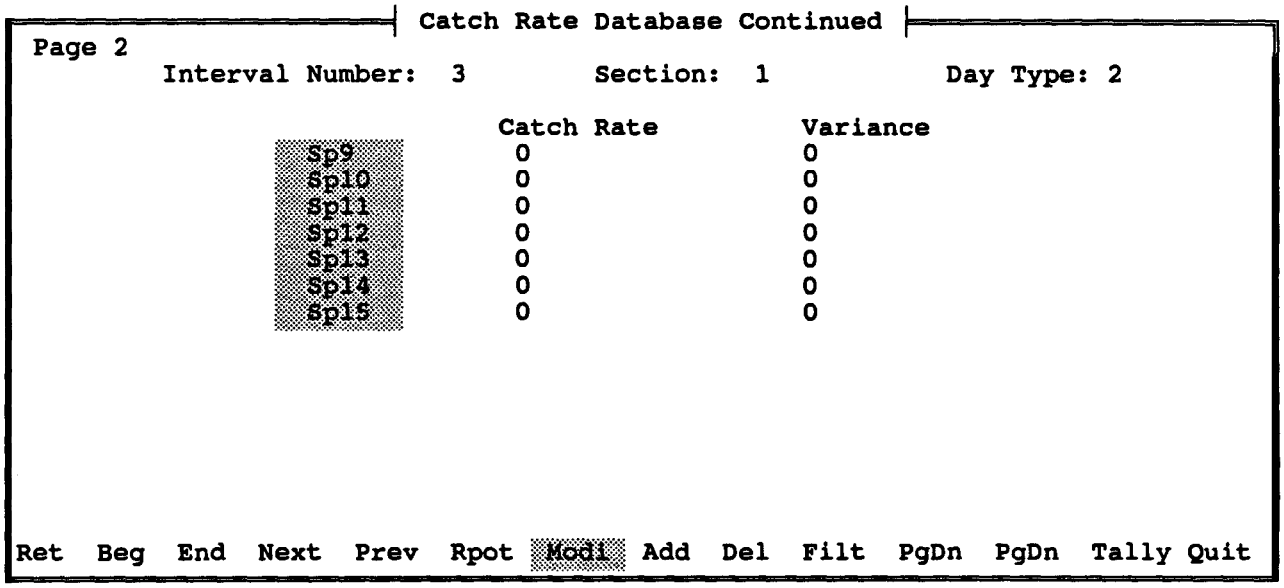
	Catch Rate	Variance
Harvested Fish	0.128	0.00256
Released Fish	0.000	0.00000
Total	0.128	0.00256

	CR-Kept	VAR-Kept	CR-Released	VAR-Released
LMB	0	0	0.182	0
CRAPPIE	0	0	0	0
BLUEGILL	0	0	0	0
PERCH	0	0	0	0
CATFISH	0	0	0	0
BULLHEAD	0.128	0.00256	0	0
TROUT	0	0	0	0
SUBLEGAL	0	0	0	0

Ret Beg End Next Prev Rpot Modi Add Del Filt PgDn PgDn Tally Quit

Modify Record — F1 - Help

To view the second page, press "PgDn." If less than nine species were listed in the survey definition then this screen will not appear.



If the user chooses "Report", and then "Print Database" the following report will be printed (requires a wide carriage printer set on condensed print):

Date: 02/05/93 Time: 10:10:07 am
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Summary for Catch Rate by Day Type and Interval - for Total hours

Body of Water: CROOKED RIVER 0 EPA Number: 1706030500.3300

SEC	INT	DAYTYPE	CR KEPT	CR RELSD	CR CGHT	CR-W SH >6 KEPT	CR-W SH >6 REL	CR-W SH <6 KEPT	CR-W SH <6 REL	CR- KEPT	CT REL	CR- KEPT	BULLT REL	CR- KEPT	H SH REL	CR- KEPT	H RB REL	CR- KEPT	MISC REL	CR- KEPT	WF REL
1	1	Weekday	2.50	7.50	10.00	2.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Sec 1 wkdy CR:			0.28	0.83	1.11	0.22	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Sec 1 wknd CR:*			0.00*	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec 1 Sson CR:			0.20	0.60	0.79	0.16	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
2	1	Weekday	2.00	10.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec 2 wkdy CR:			0.22	1.17*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec 2 wknd CR:*			0.00*	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec 2 Sson CR:			0.16	0.83*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wkdy Season CR:			0.13	0.50	0.28	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Wknd Season CR:*			0.00*	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave Season CR:			0.09	0.36	0.20	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* - Zero average

End of Report.

To print the catch rate results for species 9 - 24 choose "Report," then "Report on Species 9 - 24." This report will print only if more than nine species were listed in the survey definition. A report similar to the following will be printed (required printer width depends on the number of species):

Date: 02/05/93 Time: 10:11:33 am
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Summary for Catch Rate by Day Type and Interval - for Species 9 - 24

Body of Water: CROOKED RIVER Year of Census: 0 EPA Number: 1706030500.3300

SEC	INT	DAYTYPE	CR-KPT STHD	CR-KPT SP10	CR-KPT SP11	CR-KPT SP12	CR-KPT SP13	CR-KPT SP14	CR-KPT SP15	CR-KPT SP16	CR-KPT SP17	CR-KPT SP18	CR-KPT SP19	CR-KPT SP20	CR-KPT SP21	CR-KPT SP22	CR-KPT SP23	CR-KPT SP24
1	1	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	1	wkdy CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	1	wknd CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	1	Sson CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	2	wkdy CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	2	wknd CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sec	2	Sson CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wkdy		Season CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wknd		Season CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave		Season CR:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

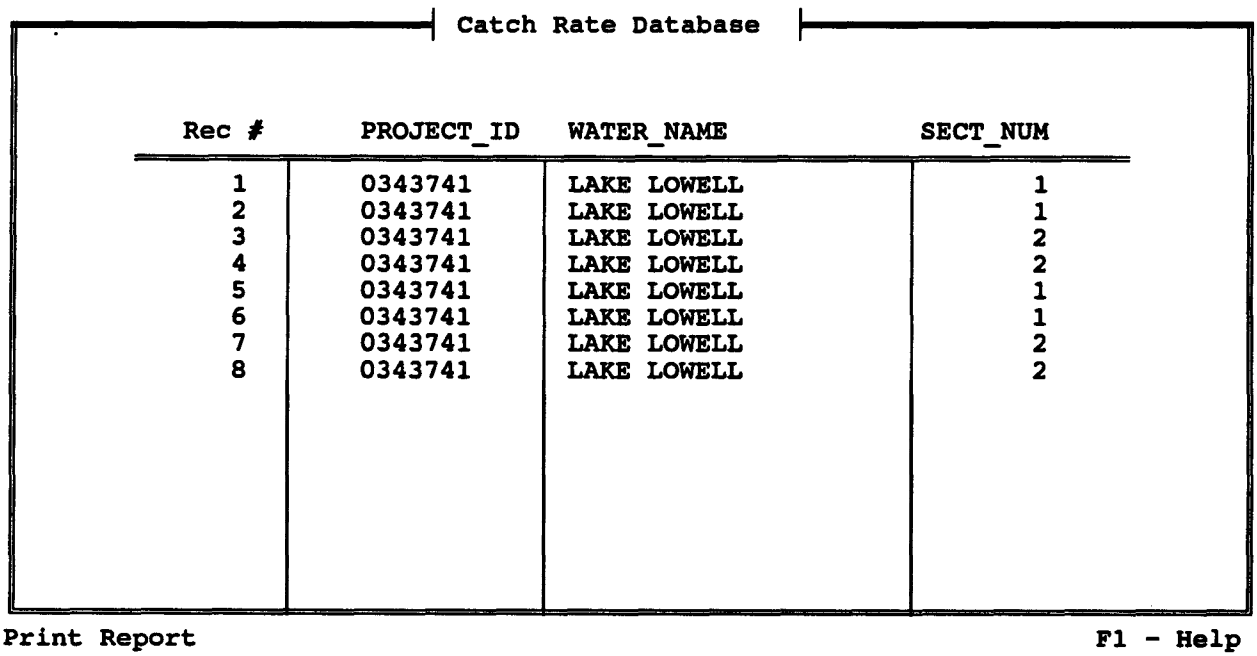
End of Report.

Other formats are also available to display the calculation results. From the menu at the bottom of the screen select "Report," then "List Database" from the small window that appears. Choose the screen or printer to display the data. If the printer is chosen, a report similar to the following will be printed (an 80-column printer set on regular sized print is sufficient for this report):

Use the arrow keys to move through the database. The up and down arrows move the

REC	WATER_NAME	SEC	EPA_NUM	INT	DC	NO_HARV	VAR_HARV	NO_RELE	VAR_RELE	CATCH	VAR_CAT
1	LAKE LOWELL	1	0343741	1	1	0.000	0.00000	0.000	0.00000	0.000	0.00000
2	LAKE LOWELL	1	0343741	1	2	0.000	0.00000	0.000	0.00000	0.000	0.00000
3	LAKE LOWELL	1	0343741	2	1	0.000	0.00000	0.000	0.00000	0.000	0.00000
4	LAKE LOWELL	1	0343741	2	2	0.000	0.00000	0.000	0.00000	0.000	0.00000
5	LAKE LOWELL	1	0343741	3	1	0.000	0.00000	0.000	0.00000	0.000	0.00000
6	LAKE LOWELL	1	0343741	3	2	0.000	0.00000	0.000	0.00000	0.000	0.00000
7	LAKE LOWELL	1	0343741	4	1	0.000	0.00000	0.000	0.00000	0.000	0.00000
8	LAKE LOWELL	1	0343741	4	2	0.000	0.00000	0.000	0.00000	0.000	0.00000

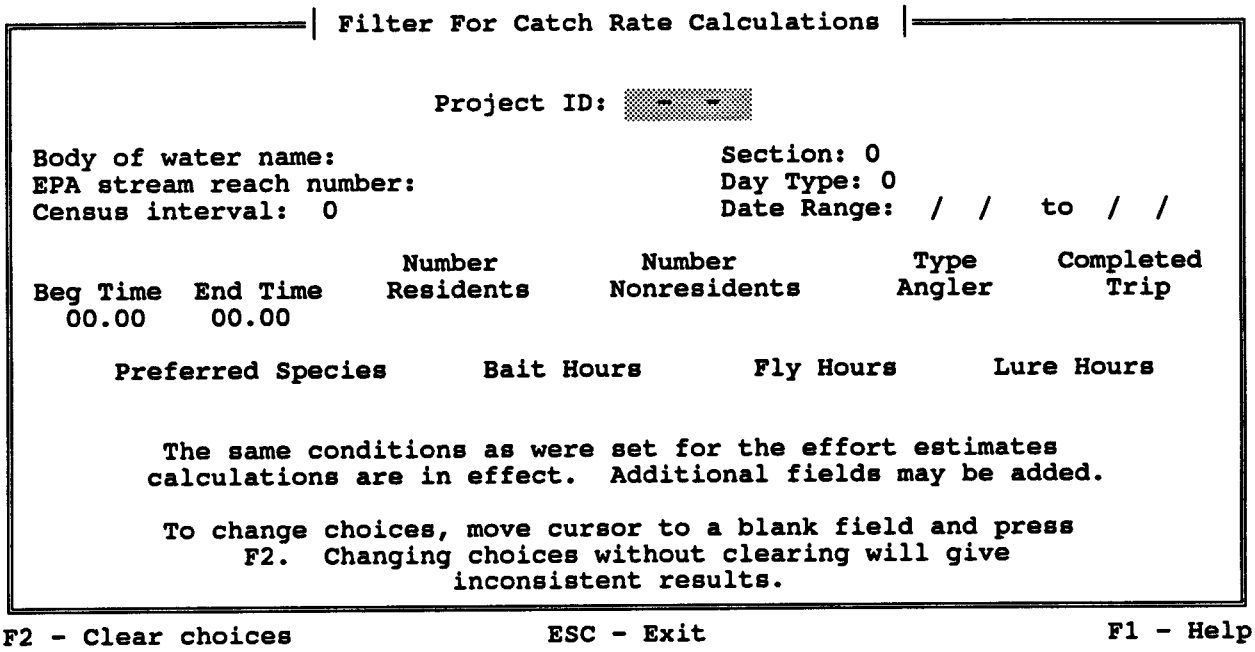
If the user wishes to view the calculation results in table form, select "Report" from the menu at the bottom of the screen. Then select "Browse" from the window that appears. Another screen will appear with the data in tabular format with some fields off the screen to the left.



user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up to show the next record. <PAGE UP> and <PAGE DOWN> display the next or previous screen of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The mouse is not supported in "Browse."

2.72 - Set Filter for Catchrate Estimates Calculations

Select 2 from the Angler Catch Rate Menu. The following screen will appear:



With an active filter, the system includes only those records meeting the filter conditions in the catch rate calculations. It works the same as the effort calculation filter. Any filter conditions set for the effort calculations are automatically included in this filter. It is possible to clear these conditions only from the effort estimates filter window. Make entries only in those fields which are to be used to select records. Do not enter spaces in a field unless you wish records with spaces in that field to be selected.

Beg Time and End time may be used singly (only those records with time greater than 14.00 for example) or together (those records with time greater than 14.00 but less than 19.00). Records with sample time equal to the specified times are not included.

Enter the **species** name under **Preferred** Species. This must **be** a **species** listed in the survery definition. Completed Trip takes a "Y" or "N". Type angler takes "BANK," "BOAT," etc. Any entry in Number Residents, Number **Nonresidents,** Bait Hours, Fly Hours and Lure Hours selects records with entries in these fields. Only one of fly, lure and bait hours can be used at one time.

If bait hours, fly hours or lure hours are included in the filter, only bait or fly or lure hours are used for the catch rate calculations, not total hours as is the usual case. If angler type of bank, boat, ice or tube is included in the filter, effort for **bank** or boat or tube or ice is used in the catch rate calculations, rather than total effort as is the usual case.

You may exit from this screen by pressing < ESC > but no entries made will be **saved.** This screen sets the filter conditions but does not turn the filter on. After all the entries are

made, the program exits to the Angler Catch Rate Menu. Choose 1, "Perform Summary Calculations." A screen will appear which says "Apply filter now? Y." Press < ENTER > to turn on the filter. A message "Filter On" will appear in the bottom center of your screen.

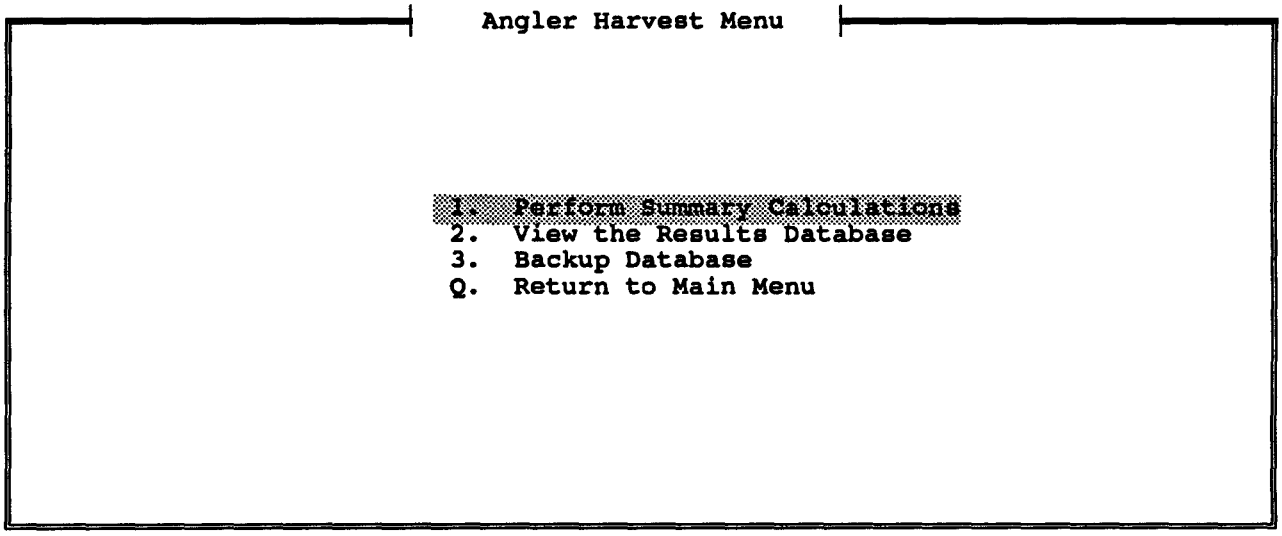
To clear or change the filter, choose "2. Set Filter for Calculations." After the screen appears, press F2 to clear the choices after positioning the cursor on a blank field. Changing the choices any other way will give inconsistent results.

If a filter is set during the catch rate calculations, this filter will be displayed on the screen during the calculations. Any report generated using the catch rate or harvest results will list these filter conditions.

2.8 - Harvest Estimates

These calculations use the results from the effort estimates (hours) and catch rate estimates (fish/hour) calculations to give harvest (number of fish). These calculations must have been done before the harvest calculations.

To calculate the Harvest Estimates select "6. Harvest Estimates," then "1. Perform Summary Calculations."



Perform Harvest calculations

These calculations will take from one to five minutes.

The calculations for the harvest estimates use the following statistical method:

Y = *Predicted harvest for a particular species*

S_Y^2 = *Standard error squared of the estimated harvest assuming no correlation between fishing pressure and mean catch rate per unit effort*

$\bar{P}$ = *Fishing pressure in man hours per day*

$\bar{CR}$ = *Mean catch rate in fish for fisherman hours*

S_P^2 = *Standard error squared of the estimated effort*

$S_{\bar{CR}}^2$ = *Standard error squared of the estimated catch rate*

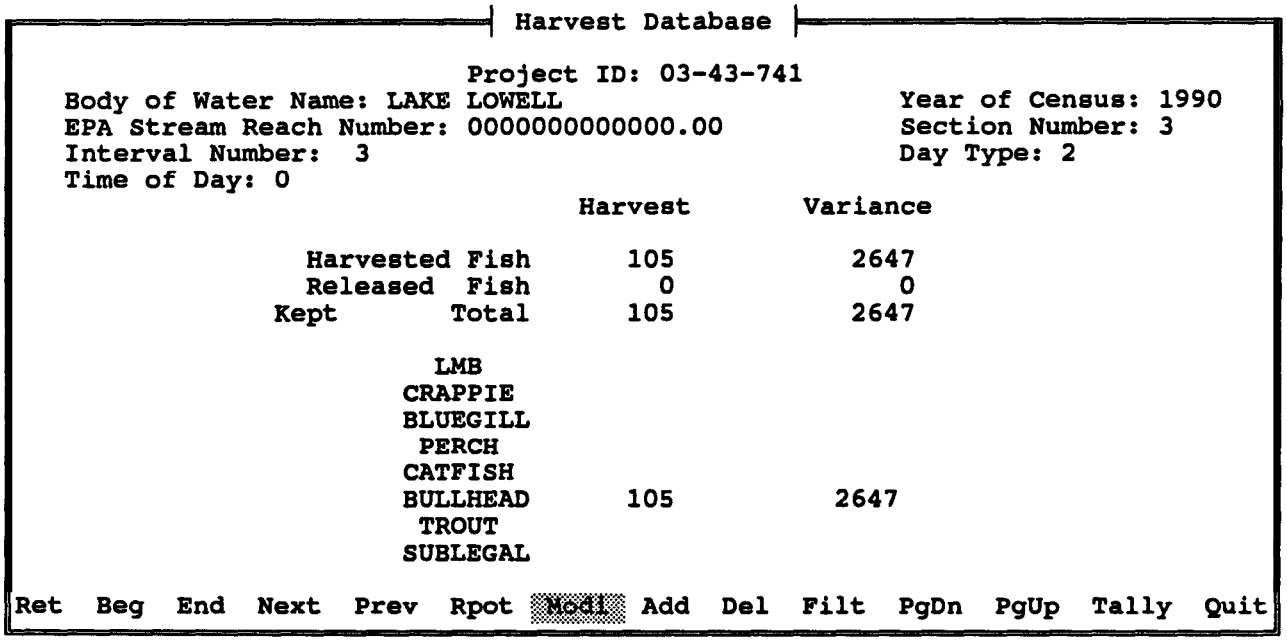
Harvest;

$$Y = P * \bar{CR}$$

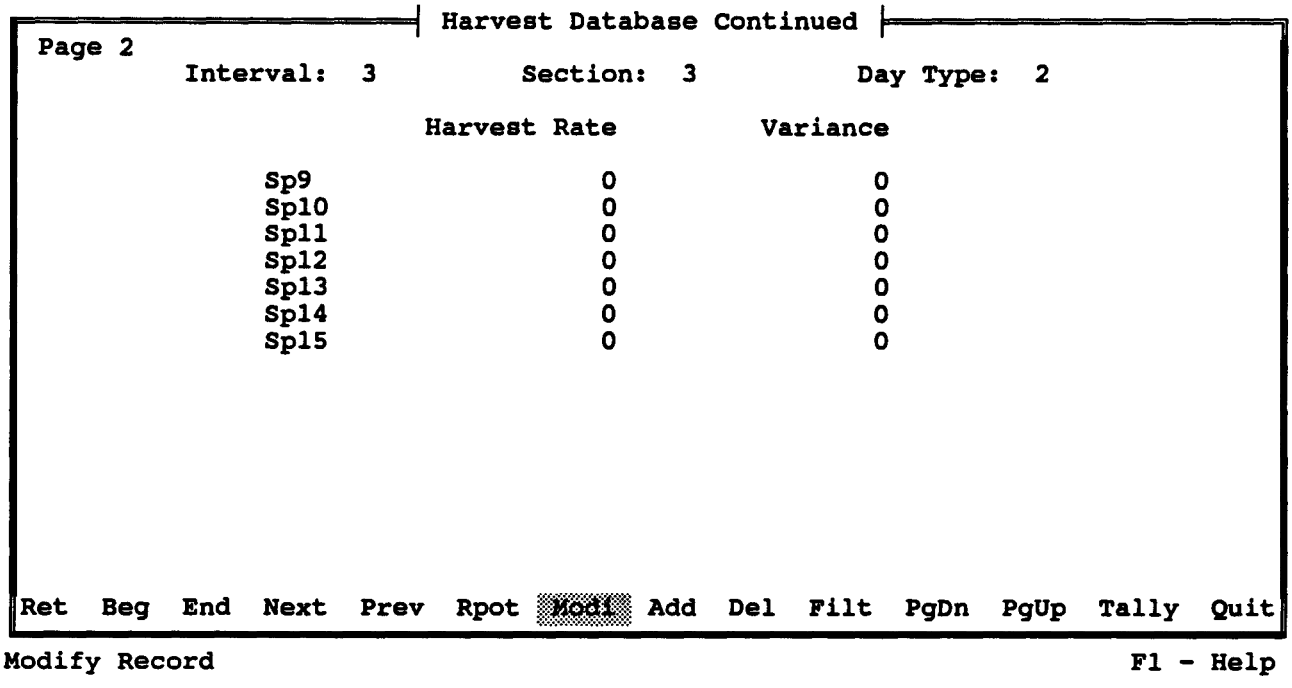
Variance;

$$S_Y^2 = S_P^2(\bar{CR})^2 + S_{\bar{CR}}^2 * P^2$$

When the calculations finish select "2. View Results Database." The user will see the following screen:



To view page 2 with species 9 - 24, press "PgDn." This screen will appear if more than eight species were listed in the survey definition.



This database cannot be changed. The commands and reports are similar to those for Effort Estimates.

To print a report that lists and summarizes the database select "Report" and then "Print Database." The following report will be printed (requires 80-column printer set on condensed print or a wide carriage printer and regular sized print). The 95% confidence interval is calculated by multiplying 2 times the square root of the variance of the value (95% C.I. = 2 * sqrt (variance)).

Date: 09/14/91 Time: 3:05:34 pm
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Summary for Harvest by Section and Interval

Body of Water: LAKE LOWELL EPA Number: 0000000000000.00
1990

SECTION NUMBER	INTERVAL	DAYTYPE	NUMBER FISH KEPT	NUMBER FISH RELEASED	NUMBER FISH CAUGHT	NUMBER LMB KEPT	NUMBER CRAPPIE KEPT
1	1	Weekday	0	0	0	0	0
		Weekend	0	0	0	0	0
	Interval 1 totals:		0	0	0	0	0
	+/- at 95% C.I.:		0	0	0	0	0
1	2	Weekday	0	0	0	0	0
		Weekend	0	0	0	0	0
	Interval 2 totals:		0	0	0	0	0
	+/- at 95% C.I.:		0	0	0	0	0
	Section 1 totals:		0	0	0	0	0
	+/- at 95% C.I.:		0	0	0	0	0
	Season totals:		0	0	0	0	0
	+/- at 95% C.I.:		0	0	0	0	0

End of Report.

To print the same report for additional species, choose "Report," then "Report on Species 9 - 24". This report will not print if less than nine species were listed in the survey definition. The width of printer required depends on the number of species. A report similar to the following will be printed:

Date: 02/05/93 Time: 10:16:03 am
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Summary for Harvest by Section and Interval

Body of Water: CROOKED RIVER Year of Census: 1992 EPA Number: 1706030500.3300

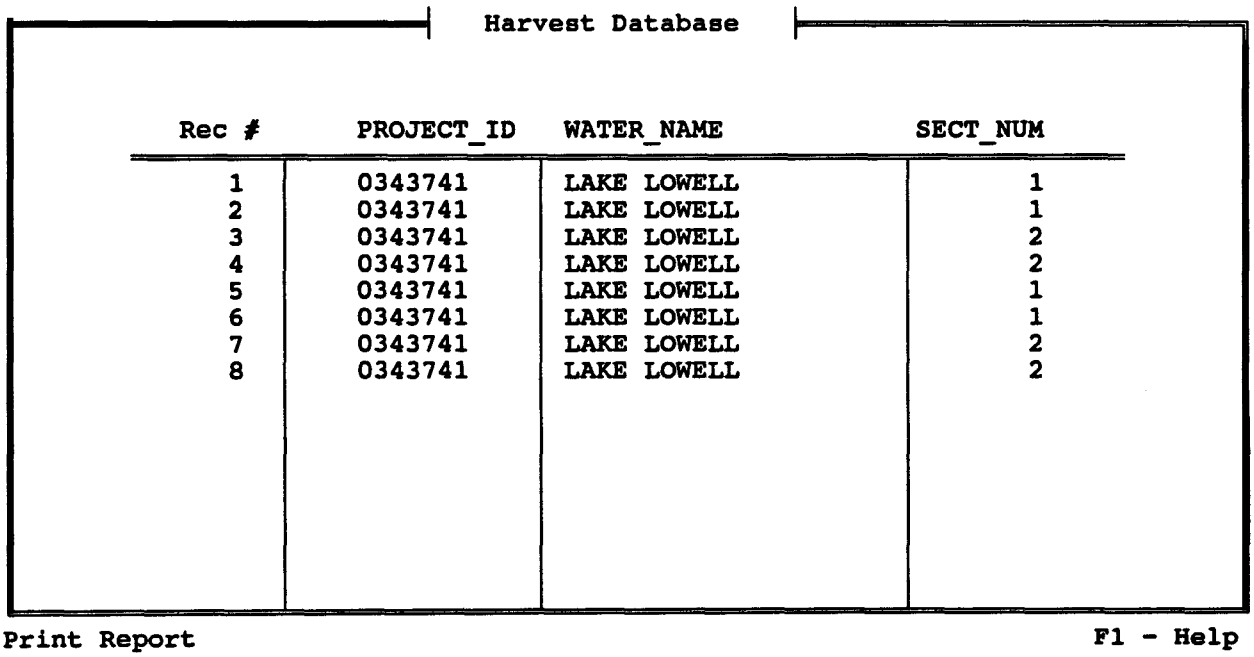
SEC NUM	INT	DY CD	STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	
Int 1 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	
1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	
Int 2 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	
1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	
Int 3 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	
1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	
Int 4 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	

End of Report.

To list the database, select "Report" and then "List Database." The user may choose the screen or printer for the list. This report requires a wide carriage printer set on condensed print. The report looks like the following:

RD	WATER_NAME	SECT_	NUM	EPA_NUM	INTERVAL	DAYCODE	YEAR	CENS	NOHARV	NO_RELE	CATCH	VAR
1	LAKE	LOWELL	1	0000.00	1	1	02/04/91		0	0	0	0
2	LAKE	LOWELL	1	0000.00	1	1	02/04/91		0	0	0	0
3	LAKE	LOWELL	1	0000.00	1	2	02/04/91		0	0	0	0
4	LAKE	LOWELL	1	0000.00	2	2	03/01/91		0	0	0	0
5	LAKE	LOWELL	1	0000.00	2	1	03/01/91		0	0	0	0
6	LAKE	LOWELL	1	0000.00	2	1	03/01/91		0	0	0	0
7	LAKE	LOWELL	1	0000.00	2	2	03/01/91		0	0	0	0
8	LAKE	LOWELL	1	0000.00	3	1	03/29/91		0	0	0	0
9	LAKE	LOWELL	1	0000.00	3	2	03/29/91		0	0	0	0
10	LAKE	LOWELL	1	0000.00	3	2	03/29/91		0	0	0	0

If the user wishes to view the calculation results in table form, select "Report" from the menu at the bottom of the screen. Then select "Browse" from the window that appears. A window will appear with the data in tabular format with some fields off the screen to the left.

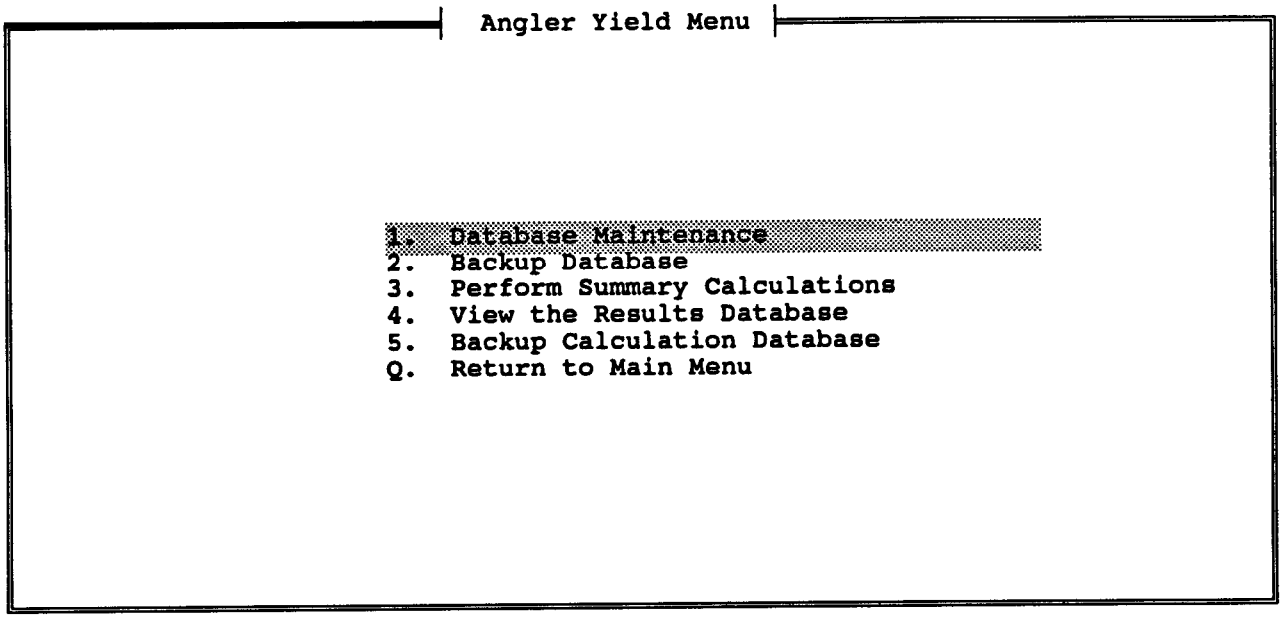


Use the arrow keys to move through the database. The up and down arrows move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up to show the next record. <PAGE UP> and <PAGE DOWN> display the next or previous screen of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The mouse is not supported in "Browse."

2.9 - Length and Weight Data

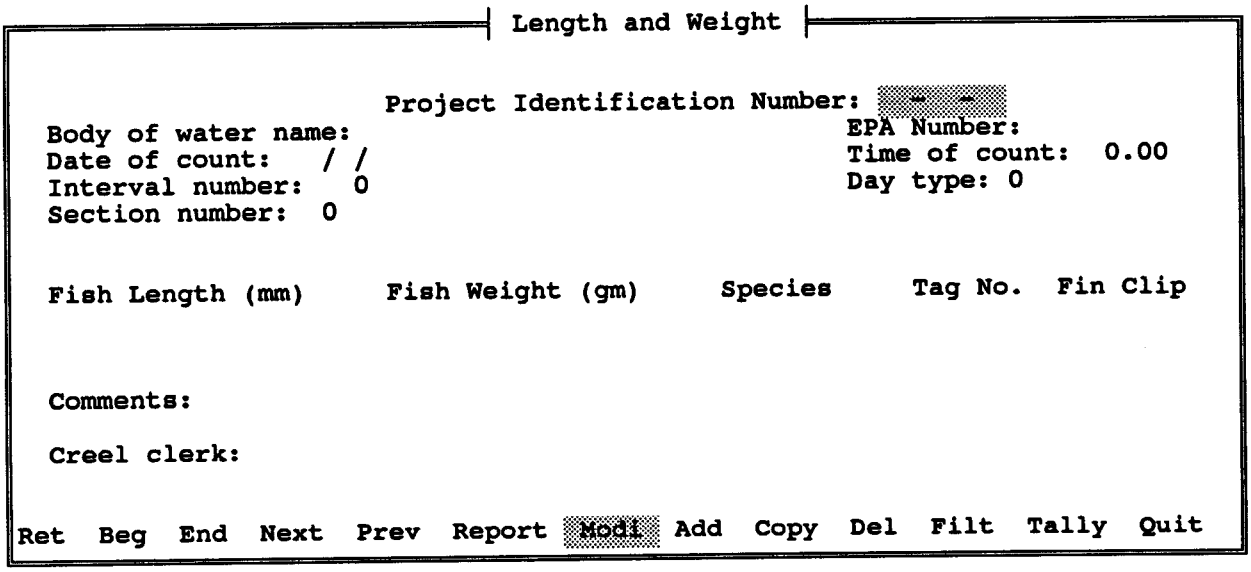
This section allows the entry and storage of fish length, weight and species data. From the Main Menu, select "7. Yield Estimates ...".

Choose 'Add' to enter each record. The system fills in the fields for water name and EPA number automatically from the survey definition. After the



Add or Edit Data

Then select "1. Database Maintenance" to enter length and weight data. The following screen will appear, which works like the other data entry screens:



Modify Record

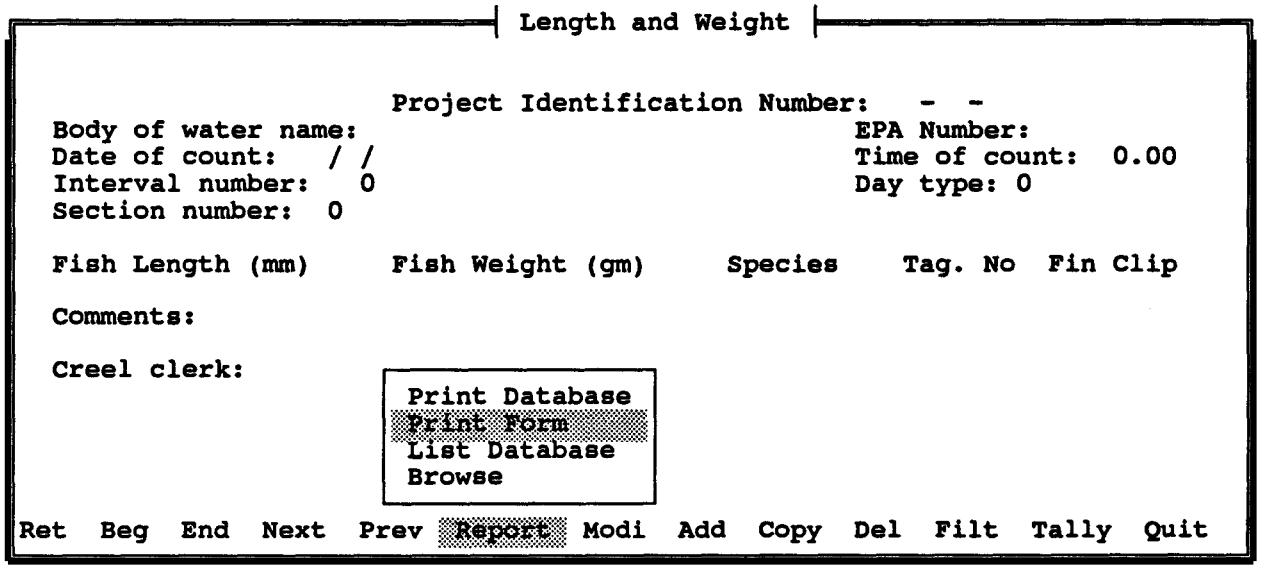
first record is entered, the system fills in several other fields also. The user can change these fields by typing the correct information and pressing <Enter>. The fields presented first are the ones most likely to require entry. The system calculates the interval and day code from the date and holiday list. When all the fields display the correct information (except interval and day code which may not have been calculated yet) press <Ctrl><Enter> to save the record.

Caution: "Add" must be selected for each NEW fish!

The following are guidelines for entering Length and Weight data:

- •Project Identification Number: Filled in automatically from the survey definition.
- •Body of water name: Filled in automatically from the survey definition.
- *EPA Number: Filled in automatically from the survey definition.
- *Date of Count: Range - survey beginning date to ending date. Filled in automatically from the previous entry (if there is one). To change, type the correct numbers and press <Enter>.
- •Time of count: Time of day using 24-hour clock. Entry not required.
- •Interval Number: Range - 1 to number in survey definition. Calculated from date of count and filled in automatically.
- *Section Number: Range - 1 to number in survey definition. Geographic section number. Entry required.
- *Day Type: Range - 1 for weekdays, 2 for weekend days. Calculated from the date of count and filled in automatically.
- .Fish Length: Range - 1 to 99,999 mm Entry required.
- *Fish Weight: Range - 1 to 99,999 gm Entry required.
- . Species Must be listed in survey definition. Entry not required.
- *Tag No. Number on tag. Entry not required.
- *Fin Clip Must be LP, RP, LV, RV, AD or spaces
- *Comments and Creel clerk: Informational. Entry not required.

To print a form for gathering data, select "Report" and then "Print Form."



Report on database

A report will be printed which looks like the following (an 80-column printer set on regular sized print is sufficient for this report):

Date: 05/11/92 Time: 12:01:51 pm

Idaho Department of Fish and Game
Creel Survey System
Lengths and Weights
Raw Data

Body of Water: LAKE LOWELL EPA Number: 0000000000000.00

LENGTH	WEIGHT	SPECIES	TAG NO.	FIN CLIP	SECTION	DATE	CLERK	COMMENTS

To print the contents of the database, select "Report", then "Print Database". The following report will be printed (an 80-column printer set on regular sized print is sufficient for this report):

Date: 09/14/91 Time: 2:58:11 pm
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Lengths and Weights
Raw Data

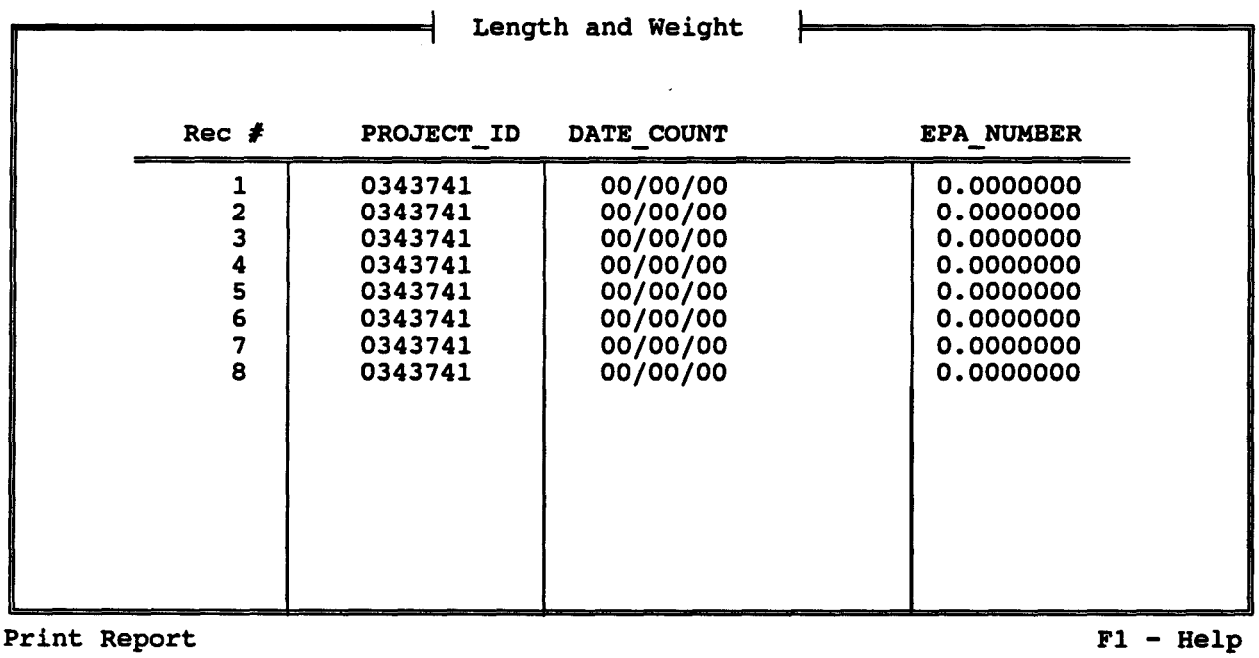
Body of Water: LAKE LOWELL EPA Number: 0000000000000.00

SECTION	DATE	INTERVAL	DAY TYPE	TIME	LENGTH	WEIGHT	SPECIES	TAG NO.	FIN CLIP
1	01/19/90	1	1	11.10	0	0			RP
1	01/19/90	1	1	11.21	0	0			
1	01/19/90	1	1	10.55	0	0	TROUT	C123	
1	01/19/90	1	1	11.35	0	0			LV
1	01/19/90	1	1	10.43	0	0			
1	01/19/90	1	1	11.41	0	0			
1	01/20/90	1	2	12.00	0	0			
1	01/20/90	1	2	12.00	0	0			LP
1	01/20/90	1	2	12.00	0	0	LMB	123-7	
1	01/21/90	1	2	14.34	0	0			
1	01/21/90	1	2	14.39	0	0			
1	01/21/90	1	2	14.55	0	0			
1	02/06/90	1	1	16.00	0	0			

A listing of the database, either on the screen or printed, can be obtained by choosing "List Database" from **the Report** Menu. A report similar **to the following** will be **printed:**

RECORD	WATER NAME	SECT_ NUM	EPA NUM	INTERVAL	DAYCODE	DATE COUNT	LENGTH	WEIGHT	SPECIES
1	LAKE LOWELL	1	0005.00	1	1	027;04/91	0.0	0.0	TROUT..
2	LAKE LOWELL	1	0000.00	1	1	02/04/91	0.0	0.0	KOKANEE
3	LAKE LOWELL	1	0000.00	1	2	02/04/91	0.0	0.0	TROUT..
4	LAKE LOWELL	1	0000.00	2	2	03/01/91	0.0	0.0	CATFISH
5	LAKE LOWELL	1	0000.00	2	1	03/01/91	0.0	0.0	CATFISH
6	LAKE LOWELL	1	0000.00	2	1	03/01/91	0.0	0.0	TROUT..
7	LAKE LOWELL	1	0000.00	2	2	03/01/91	0.0	0.0	TROUT..
8	LAKE LOWELL	1	0000.00	3	1	03/29/91	0.0	0.0	TROUT..
9	LAKE LOWELL	1	0000.00	3	2	03/29/91	0.0	0.0	KOKANEE
10	LAKE LOWELL	1	0000.00	3	2	03/29/91	0.0	0.0	TROUT..

If the user wishes to view the data in table form, select "Report" from the menu at the bottom of the screen. Then select "Browse" from the window that appears. Another window will



appear with the data in tabular format with some fields off the screen to the left.

Use the arrow keys to move through the database. The up and down arrows move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up to show the next record. <**PAGE** UP> and <**PAGE** DOWN> display the next or previous screen of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The **mouse** is **not supported** in **"Browse."**

3.0 - Yield Estimates

These calculations use the average fish weight from the length and weight data and the harvest estimates results (number of fish) to give yield (kilograms). The effort estimates, catch rate estimates and harvest estimates calculations must have been run before the yield estimates calculations. Length and weight data must have been entered.

To run these calculations, select "7. Yield Estimates" from the Main Menu and then "3. Perform Summary Calculations" from the Angler Yield Menu. The yield calculations use the following statistical **method:**

D = *Total predicted yield*

D_i = *Predicted yield for the ith species*

S_D^2 = *Standard error squared of the estimated yield assuming no correlation between harvest and the mean weight per fish*

n = *Number of fish measured*

w_i = *Weight of the ith fish*

$\bar{W}$ = *Average weight per fish*

S_W^2 = *Standard error squared of the mean fish weight*

l_i = *Length of the ith fish*

$\bar{L}$ = *Average length per fish*

S_L^2 = *Standard error squared of the mean fish length*

Y = *Total estimated harvest*

Y_i = *Estimated harvest for the ith species*

S_Y^2 = *Standard error squared of the estimated harvest*

A = *Body of water area from survey definition*

Summary data;

$$\bar{W} = \frac{\sum_i^n w_i}{n} \qquad W^2 = \sum_i^n w_i^2 \qquad \bar{L} = \frac{\sum_i^n l_i}{n} \qquad L^2 = \sum_i^n l_i^2$$

Yield;

$$D_i = \bar{W} * Y$$

$$S_D^2 = S_W^2 * Y^2 + S_Y^2 * \bar{W}^2 \text{ where}$$

$$S_D^2 = \frac{1}{n(n-1)}\left(W^2 - \frac{(W)^2}{n}\right) \text{ and } S_L^2 = \frac{1}{n(n-1)}\left(L^2 - \frac{(L)^2}{n}\right)$$

Total Yield; $D = \sum_i^n D_i$ *Total Error*; $S_D^2 = \sum_i^n S_{D_i}^2$

Yield / Hectare $= \frac{D}{A}$ *Fish / Hectare* $= \frac{Y}{A}$

$$S_{Y|H}^2 = \left(\frac{1}{A}\right)^2 * S_D^2 \qquad S_{F|H}^2 = \left(\frac{1}{A}\right)^2 * S_Y^2$$

When the calculations finish, select "4. View the Results Database" from the Angler Yield Menu. The following screen will appear:

Yield Database

Project ID: 03-43-741

Body of Water Name: LAKE LOWELL — Year of Census: 1990
EPA Stream Reach Number: 0000000000000.00 — Section Number: 3
Interval Number: 3 — Day Type: 2

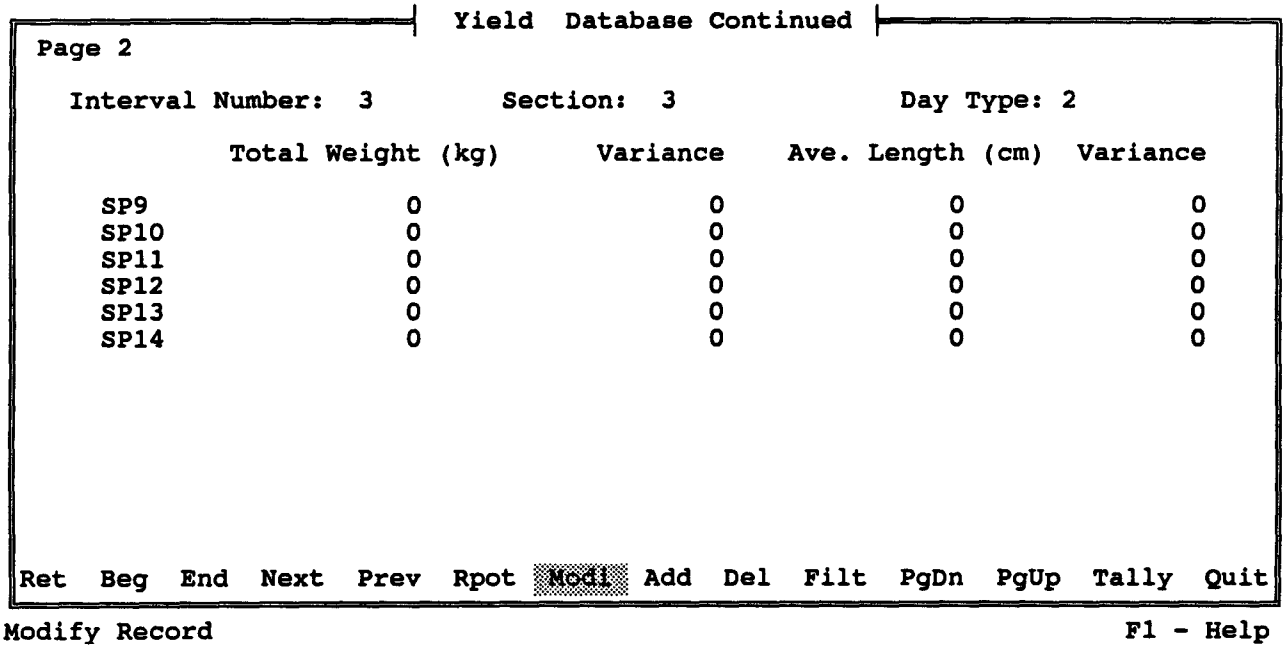
	Total Weight (kg)	Variance	Ave. Length (cm)	Variance
LMB	0	0	0	0
CRAPPIE	0	0	0	0
BLUEGILL	0	0	0	0
PERCH	0	0	0	0
CATFISH	0	0	0	0
BULLHEAD	0	0	0	0
TROUT	0	0	0	0
SUBLEGAL	0	0	0	0
TOTAL	0	0		

Yield/Hectare	Variance	Fish/Hectare	Variance
0	0	0	0

Ret Beg End Next Prev Rpot Modi Add Del Filt PgDn Pgup Tally Quit

Modify Record — F1 - Help

To view the results for species 9 - 24 press "PgDn." This screen will appear only if more than eight species were listed in the survey definition.



The user cannot modify or add data to this database. The commands and reports for this database are similar to those for the Harvest database.

If the user selects "Report" and then "Print Database" the following report will be printed (requires an 80-column printer set on condensed print or a wide carriage printer set on regular sized print):

Date: 05/11/92 Time: 12:03:38 pm
Page: 1

Idaho Department of Fish and Game
Creel Survey System
Summary for Yield by Section and Interval

Body of Water: LAKE LOWELL EPA Number:
000000.00
1991

SEC NUM	INT	DAY TYPE	YIELD(kg) Total	YIELD LMB AVE LEN	YIELD CRAPPIE AVE LEN	YIELD BLUEGILL AVE LEN	YIELD PERCH AVE LEN	YIELD CATFISH AVE LEN	YIELD... BULLHD.. AVE LEN
1	1	Weekday	0	0 0	0 0	0 0	0 0	0 0	0.. 000
		Weekend	0	0 0	0 0	0 0	0 0	0 0	0.. 000
Interval 1 Totals:			0	0	0	0	0	0	0
+/- at 95% C.I.:			0	0	0	0	0	0	0
Section 1 Totals:			0	0	0	0	0	0	0
+/- at 95% C.I.:			0	0	0	0	0	0	0

Allometric Growth Equation:

LMB	WT =	0.000000 * LEN**0.000
CRAPPIE	WT =	0.000000 * LEN**0.000
BLUEGILL	WT =	0.000000 * LEN**0.000
PERCH	WT =	0.000000 * LEN**0.000
CATFISH	WT =	0.000000 * LEN**0.000
BULLHEAD	WT =	0.000000 * LEN**0.000
TROUT	WT =	0.000000 * LEN**0.000
SUBLEGAL	WT =	0.000000 * LEN**0.000

where * means multiplication, ** means exponent
weight in grams, length in centimeters

End of Report

The 95% confidence interval is calculated by multiplying 2 times the square root of the variance of the value (95% C.I. = 2 * sqrt(variance)).

The condition factor and exponent of the allometric growth equations are calculated using the method of least squares for a linear regression. The following method is used:

$$Wt = a\ Len^b \qquad \ln Wt = \ln a + b\ (\ln Len)$$

$$b = \frac{SS_{WL}}{SS_{WW}} \qquad \ln a = \overline{\ln Wt} - b\ \overline{\ln Len}$$

where

$$SS_{WL} = \sum (\ln Wt_i) * (\ln Len_i) - \frac{(\sum \ln Wt_i)(\sum \ln Len_i)}{n}$$

$$SS_{WW} = \sum \ln Len_i^2 - \frac{(\sum \ln Len_i)^2}{n}$$

$$\overline{\ln Wt} = \frac{\sum \ln Wt_i}{n} \qquad \overline{\ln Len} = \frac{\sum \ln Len_i}{n}$$

To print the results for species 9 - 24 select "Report," then "Report on Species 9 - 24." This report will print only if more than eight species were listed in the survey definition. It looks similar to the following (the width of printer required depends on the number of species):

Date: 02/05/93
Page: 1

Time: 10:21:59 am

Idaho Department of Fish and Game
Creel Survey System
Summary for Harvest by Section and Interval

Body of Water: CROOKED RIVER Year of Census: 1991 EPA Number: 1706030500.3300

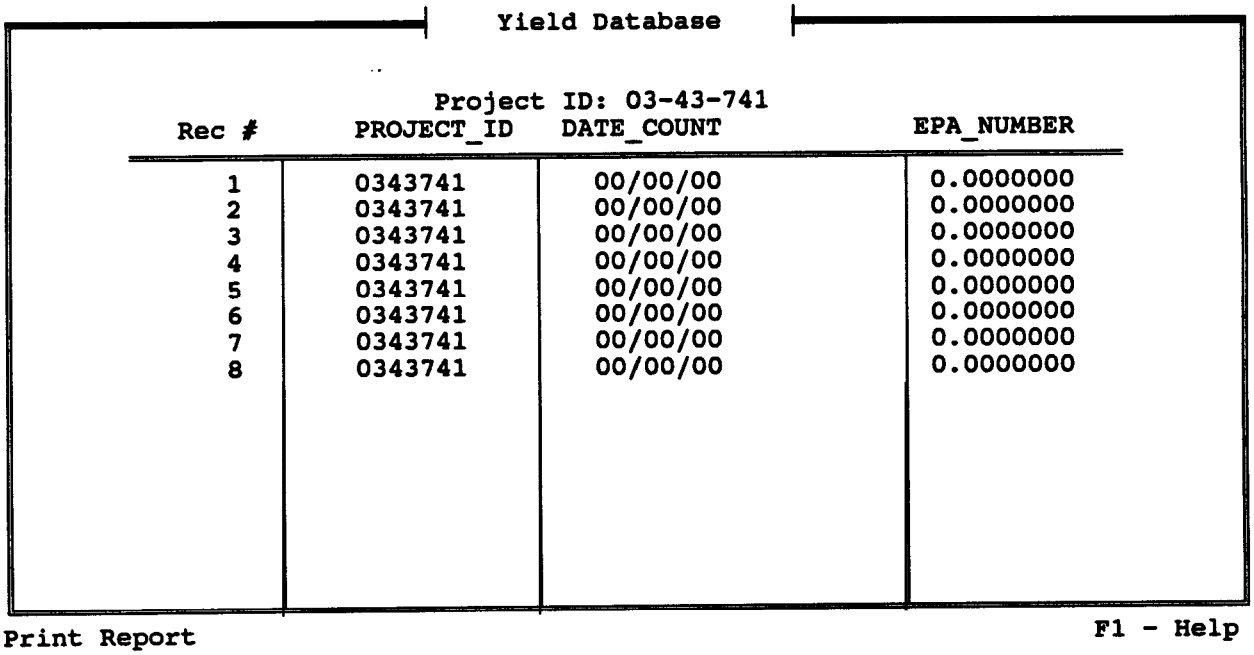
SEC NUM	INT	DY CD	STHD	SP10	SP11	SP12	SP13	SP14	SP15	SP16	SP17	SP18	SP19	SP20	SP21
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Int 1 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	
Sec 1 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/-95% CI:			0	0	0	0	0	0	0	0	0	0	0	0	
2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Int 1 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/- 95%CI:			0	0	0	0	0	0	0	0	0	0	0	0	
Sec 2 Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/-95% CI:			0	0	0	0	0	0	0	0	0	0	0	0	
Seasn Tot:			0	0	0	0	0	0	0	0	0	0	0	0	
+/-95% CI:			0	0	0	0	0	0	0	0	0	0	0	0	

End of Report.

If the user selects "Report" and then "List Database" the following report will be printed or displayed on the screen (an 80-column printer set on regular sized print is sufficient for this report):

RECORD	WATER_NAME	SECT_NUM	EPA_NUM	INTVL	DAYCODE	YEAR_CENS	TOT_WEIGHT	TOT_ST_VAR
1	LAKE LOWELL	1	00000.0	1	1	1991	0	0
2	LAKE LOWELL	2	00000.0	1	1	1991	0	0
3	LAKE LOWELL	1	00000.0	2	1	1991	0	0
4	LAKE LOWELL	2	00000.0	2	1	1991	0	0
5	LAKE LOWELL	1	00000.0	3	1	1991	0	0
6	LAKE LOWELL	2	00000.0	3	1	1991	0	0

If the user wishes to view the calculation results in table form, select "Report" from the menu at the bottom of the screen. Then select "Browse" from the window that appears. Another window will appear with the data in tabular format with some fields off the screen to the left.



Use the arrow keys to move through the database. The up and down arrows move the user forward and backward through the database. If the cursor is at the bottom of the window and there are more records, press the down arrow again and the screen will scroll up showing the next record. <PAGE UP> and <PAGE DOWN> display the next or previous screen of records. The left and right arrows move sideways through the data. This enables the user to view the fields that are not visible. Press <ESC> to exit. The mouse is not supported in "Browse."

3.1 - Tag and Fin Clip Summary

```
Tag/Fin Clip, Length and Weight Freq. Menu

        1.  Tag and Fin Clip Calculations
        2.  Display Tag/FC Frequencies
        3.  Backup Calculation Database
        4.  Length Frequency Calculations
        5.  Display Length Frequencies
        6.  Backup Length Freq. Database
        7.  Weight Frequency Calculations
        8.  Display Weight Frequencies
        9.  Backup Weight Freq. Database
        Q.  Return to Main Menu

Add or Edit Data
```

From the Tag/Fine Clip, Length & Weight Freq. Menu select "1. Tag and Fin Clip Calculations. The program first goes through the length and weight database and summarizes the number of tags and fins clips of each type for each species and for each interval, section and day type. These calculations should take only a short time. When they finish, select "2. Display Tag/FC Frequencies." The following screen will appear:

```
Tag and Fin Clip Summary
Page 1
                          Project ID: 000000000.00
          Water Name: LAKE LOWELL              Census Year: 1991
           Section Number:  1  Interval Number:  1 Day Type:  1

               Tagged   Fin Clip:  LP    RP    LV    RV    AD
    LMB             0                0     0     0     0     0
  CRAPPIE           0                0     0     0     0     0
  BLUEGILL          0                0     0     0     0     0
   PERCH            0                0     0     0     0     0
  CATFISH           0                0     0     0     0     0
  BULLHEAD          0                0     0     0     0     0
   TROUT            0                0     0     0     0     0
  SUBLEGAL          0                0     0     0     0     0
    SP9             0                0     0     0     0     0
    SP10            0                0     0     0     0     0
    SP11            0                0     0     0     0     0
    SP12            0                0     0     0     0     0


Ret  Beg  End  Next  Prev  Rpot  Modi  Add  Del  Filt  PgDn PgUp Tally Quit
```

To view the results for species 9 - 24 select "PgDn." If more than eight species were listed in the survey definition the following screen will appear:

Tag and Fin Clip Summary

Page 2

Project ID: 000000000.00

Water Name: LAKE LOWELL Census Year: 1991

Section Number: 1 Interval Number: 1 Day Type: 1

	Tagged	Fin Clip: LP	RP	LV	RV	AD
SP13	0	0	0	0	0	0
SP14	0	0	0	0	0	0
SP15	0	0	0	0	0	0
SP16	0	0	0	0	0	0
SP17	0	0	0	0	0	0
SP18	0	0	0	0	0	0
SP19	0	0	0	0	0	0
SP20	0	0	0	0	0	0
SP21	0	0	0	0	0	0
SP22	0	0	0	0	0	0
SP23	0	0	0	0	0	0
SP24	0	0	0	0	0	0

Ret Beg End Next Prev Rpot Modi Add Del Filt PgDn PgUp Tally Quit

The user can page through these results using Beg, End, Next and Prev. The calculation results with totals also can be printed by choosing "Report." A report similar to the following will be printed (an 80-column printer set on regular sized print is sufficient for this report):

Date: 05/11/92 Time: 12:03:38 pm
Page: 1

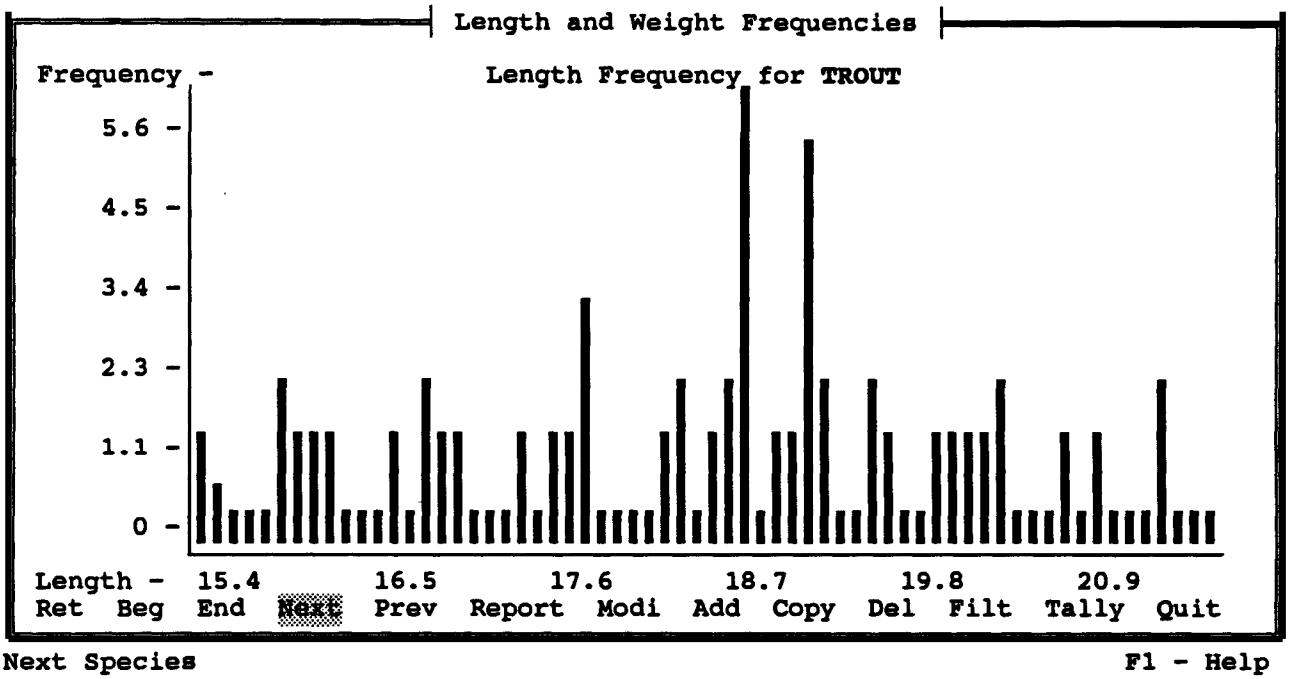
Idaho Department of Fish and Game
Creel Survey System
Summary of Tags and Fin Clips

Body of Water: LAKE LOWELL EPA Number:
000000.00
1991

INTVL NUMB	SECT NUMB	DAY TYPE		TAGS	FIN CLIPS: LP	RP	LV	RV	AD	DAYC TOTAL	SECT TOTAL	INTV TOTAL	GRAND TOTAL
1	1	1											
			LMB	0	0	0	0	0	0	0			
			CRAPPIE	0	0	0	0	0	0	0			
			BLUEGILL	0	0	0	0	0	0	0			
			PERCH	0	0	0	0	0	0	0			
			CATFISH	0	0	0	0	0	0	0			
			BULLHEAD	0	0	0	0	0	0	0			
			TROUT	0	0	0	0	0	0	0			
			SUBLEGAL	0	0	0	0	0	0	0			
		Day Type Total		0	0	0	0	0	0				
1	1	2											
			LMB	0	0	0	0	0	0	0	0	0	0
			CRAPPIE	0	0	0	0	0	0	0	0	0	0
			BLUEGILL	0	0	0	0	0	0	0	0	0	0
			PERCH	0	0	0	0	0	0	0	0	0	0
			CATFISH	0	0	0	0	0	0	0	0	0	0
			BULLHEAD	0	0	0	0	0	0	0	0	0	0
			TROUT	0	0	0	0	0	0	0	0	0	0
			SUBLEGAL	0	0	0	0	0	0	0	0	0	0
		Day Type Total		0	0	0	0	0	0				
		Section Totals		0	0	0	0	0	0				
		Interval Totals		0	0	0	0	0	0				
		Grand Total		0	0	0	0	0	0				

3.2 - Length and Weight Frequency Calculations

From the Tag/Fin Clip, Length & Weight Freq. Menu select "4. Length Frequency Calculations" or "7. Weight Frequency Calculations" by moving the light bar with the arrow keys and pressing < Enter> . "Calculating... Please stand by." will **appear** on the screen. These calculations should take **about** the same length of time as the catch rate calculations to perform. For a large database file (e.g. 3000 records) they could take as long as twenty minutes. When they finish **choose** "5. Display Length **Frequencies" or** "8. **Display** Weight Frequencies." The following screen will appear if the user chose to display length **frequencies:**



A similar screen will **appear** if the user **chooses** weight **frequency** calculations. The calculations and screens **are** the same for **both** length **and** weight **except different data** is **used** in the calculations.

The smallest and largest length or weight is found in the length and weight **database.** That interval is divided into sixty (60) subintervals and each length or weight is counted in a subinterval. Lengths are in centimeters. Weights are in grams. Frequency is the number of counts in that subinterval.

Length or weight frequencies for other species, intervals, sections or day types can be displayed by selecting "Next," "Prev," "Beg," or "End." If "Ret" is **selected,** a small window will appear which asks for the interval, section, day **type and** name of the **species to display.** Type the requested information. The species name must **be one** of the **species entered** in the survey definition. If the species name does not match one in the survey definition a window will appear which lists the species that have been defined. If you wish to display a total, type "99" in the field. For example, if you wish to see the total for interval 1 and Trout, type "1" for interval, "99" for section, "9" for day type, and "TROUT" for species.

If "Filter" is chosen, a small screen similar to the one for "Retrieve" will **appear** which asks for the same information, interval, section, day type and/or species. The filter selects

those records that match the conditions you enter. Enter "99" if you wish only total records to be visible (e.g. "1" for interval, "1" for section, and "9" for day type makes only interval 1, section 1 totals visible. "99" for interval, "99" for section and "9" for day type makes only species totals visible). This filter also limits the number of records that are printed on reports.

If "Report" is chosen, a small window will appear asking if only total records or all records should be printed. Choose "Y" (or <Enter>) for total records, "N" for all. The number of records to be printed can be limited by a filter. This report will not include species for which the frequencies are zero. A report will be printed which lists the actual numbers of frequencies similar to the following (an 80-column printer set on regular sized print is sufficient for this report):

Date: 07/22/92 Page: 1 Time: 3:12:27 pm

Idaho Department of Fish and Game
Creel Survey System
Length Frequencies

TROUT		CATFISH		BULLHEAD		CRAPPIE	
LENGTH	FREQUENCY	LENGTH	FREQUENCY	LENGTH	FREQUENCY	LENGTH	FREQUENCY
15.40	1	0.00	0	0.00	0	0.00	0
15.51	0	0.00	0	0.00	0	0.00	0
15.62	0	0.00	0	0.00	0	0.00	0
15.73	0	0.00	0	0.00	0	0.00	0
15.84	0	0.00	0	0.00	0	0.00	0
15.95	2	0.00	0	0.00	0	0.00	0
16.06	1	0.00	0	0.00	0	0.00	0
16.17	1	0.00	0	0.00	0	0.00	0
16.28	1	0.00	0	0.00	0	0.00	0
16.39	0	0.00	0	0.00	0	0.00	0
16.50	0	0.00	0	0.00	0	0.00	0
16.61	0	0.00	0	0.00	0	0.00	0
16.72	1	0.00	0	0.00	0	0.00	0
16.83	0	0.00	0	0.00	0	0.00	0
16.94	2	0.00	0	0.00	0	0.00	0
17.05	1	0.00	0	0.00	0	0.00	0
17.16	1	0.00	0	0.00	0	0.00	0
17.27	0	0.00	0	0.00	0	0.00	0
17.38	0	0.00	0	0.00	0	0.00	0
17.49	0	0.00	0	0.00	0	0.00	0
17.60	1	0.00	0	0.00	0	0.00	0
17.60	0	0.00	0	0.00	0	0.00	0
17.71	1	0.00	0	0.00	0	0.00	0
17.82	1	0.00	0	0.00	0	0.00	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
21.01	0	0.00	0	0.00	0	0.00	0
21.12	0	0.00	0	0.00	0	0.00	0
21.23	0	0.00	0	0.00	0	0.00	0
21.34	1	0.00	0	0.00	0	0.00	0
21.45	0	0.00	0	0.00	0	0.00	0
21.56	1	0.00	0	0.00	0	0.00	0
21.67	0	0.00	0	0.00	0	0.00	0
21.78	0	0.00	0	0.00	0	0.00	0
21.89	2	0.00	0	0.00	0	0.00	0

End of report.

4 - Creel System Commands

Keyboard Commands:

<ALT> <M> Displays available memory. This **command** can only **be executed from** the data entry screens.

<ALT> < S > Enters the set up screen. The **program and data directories** can **be** changed only from the Creel Survey Main Menu. The other entries can be **changed** from anywhere in the system.

<ALT> < T > Displays the current time.

<ALT> < V > Displays the version of CCS.

< CTRL > < ENTER > End an edit, save the changes.

<CTRL> <N> Starts a new creel. The user will **be prompted** to enter the **directory** for the new creel. If data exists in that directory, the program will ask if the **data** should be overwritten. If the user chooses "Y," the data in the **directory** will **be deleted.** If the **directory** does not exist, it will be created.

< ESC > Abort, Exit.

< F l > This gives context sensitive help. A window will **appear** with help information about the current section, but not all sections have help **information.** Use the arrow keys to scroll through the help data. The help index also does not exist.

< F2> Clear Choices. This command can be **executed** when setting filter conditions. It resets all the conditions to blank or zero values.

< Print Screen > A DOS command which prints the contents of the screen. This command can be used from any screen in the Creel Census System. See your DOS manuel for more information.

Data Screen Menu Commands:

Ret: Retrieves a record. The options to retrieve on **depend** on the **database** the user is now using. Use the arrow keys or press the highlighted letter to select the **desired** option. Retrieve cannot find records "hidden" by a filter.

Skip: In the Ret menu. This command allows the user to skip any given number of records. Enter a positive number to skip forward and a negative number to skip backward. The system will not **skip past** the beginning or end if the **database. Skip** cannot find **records** "hidden" by a filter.

Go to Record: In the Ret menu. This command retrieves **a record number. Type the**

record number wanted at the prompt after selecting this item. If the record does not exist, a message will appear. Go to Record cannot find records "hidden" by a filter.

Report: Opens the report menu with several options.

List Database: In the Report Menu. Lists the contents of selected fields of the database to the screen or printer. <ESC> aborts the list. List does not display records "hidden" by a filter.

Print Forms: In the Report Menu. Prints field forms for gathering data.

Print Database: In the Report Menu. Prints the contents of the database in summary or raw data format. Records "hidden" by a filter are not printed.

Browse: In the Report Menu. Displays the database in tabular format. Data cannot be edited in the browse mode. Use up arrow, down arrow, page up, and page down keys to move through the records. Use the left and right arrows to move through the fields. Browse does not display records "hidden" by a filter.

Set Filter: Opens the filter menu.

Set Filter: In the Filter menu. Only records which match all the conditions set will be visible. If the user sets interval to 2 and section to 1, only records with both these conditions will be visible. Press <F2> to clear the filter choices. The Creels Census System "remembers" the filter conditions. These can be turned on or off by choosing "Apply Filter" and "Remove Filter." The conditions are saved when the user exits the Creel Census System. If the filter is on, a message of "Filter On" is displayed at the bottom of the screen.

Apply Filter: In the Filter Menu. This option applies the filter condition that was set in the Set Filter selection. "Filter On" will appear at the bottom of the screen if successful.

Remove Filter: In the Filter Menu. Turns the filter off. The filter condition is saved and can be turn on again by selecting "Apply Filter".

Quit: Returns the user to the previous menu.

Menu Commands:

Back up databases: Makes a copy of the database now in use in the designated directory. This option is also used for copying and distributing the calculated results.

Q. Return to Main Menu: Returns to the Creel Survey main menu. Q.

Quit (Exit System): Exits the Creel Census System.

Appendix A - Special Situations

Custom Reports from the creel data:

Quit the Creel Census System and return to the root directory of the hard drive by typing CD\.

Create a new directory for a copy of the creel files by typing MD *directory* name <ENTER>.

Change into the new directory by typing *CD\directory* name <ENTER>

Copy the files from their current location to the new directory by typing XCOPY C:\CREEL.91*.DBF /v <ENTER> if CREEL.91 is the name of the directory where the files are located.

Create custom reports using these file copies and dBase. Do not recopy the files to the creel data directory. Corruption or loss of data could result.

For more information on using DOS commands, refer to your MS-DOS manual.

Report lines wrap and columns misaligned

If a line wraps to the next line on any report make sure the printer is set to condensed print. Some reports require a wide carriage printer and condensed print.

Retrieves displaying incorrect record or records missing from calculation results:

If retrieves are displaying an incorrect record or not finding an existing record or some records are missing from calculation results, then the database indexes may be corrupted. To rebuild the indexes do the following:

Change to the creel data directory on the hard disc drive by typing **CD\CREEL.91** <ENTER>

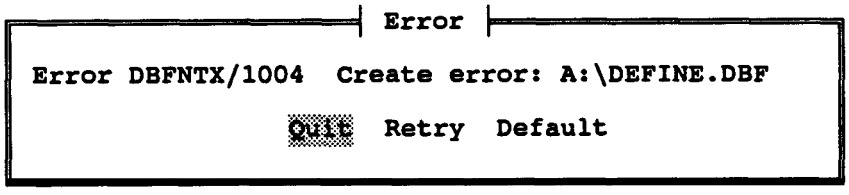
Delete the **database index files** by **typing** DEL * . **NTX <ENTER>.**

Return **to** the **root directory** by typing CD\ **<ENTER>**

The next time the creel system is run the directories will be rebuilt. If problems still exist contact Tom McArthur at **334-3791.**

System errors:

The following is an example of a system error:



If a similar window appears regardless of the error listed, select 'Quit' then press <PRINT SCREEN>. Call Tom McArthur at **334-3791. FAX** the print out **to 334-2114.**

System error: Cannot open indexes:

Check your CONFIG.SYS file. The file statement should be "FILES =40". If it is a smaller number, change it, reboot your system, and try again.

System error: Out of memory:

Check that no other program is present in memory. Cancel any TSR programs that are normally running.

System error: Out of VM swap space:

Your disc is probably too full. Reorganize your disc and create more empty disc space.

Appendix B - Database Structures

Structure for: DEFINE.DBF

Number	Name	Type	Length	Dec
1	PROJECT ID	C	7	
2	PROJNAME	C	20	
3	LEADER	C	20	
4	WATER_NAME	C	20	
5	EPA NUMBER	C	16	
6	START_DATE	D	8	
7	END_DATE	D	8	
8	CONTACT	C	6	
9	NUSAMP	C	1	
10	DAYSAMP	C	1	
11	BOATSAMP	C	1	
12	NSPECIES1	C	8	
13	NSPECIES2	C	8	
14	NSPECIES3	C	8	
15	NSPECIES4	C	8	
16	NSPECIES5	C	8	
17	NSPECIES6	C	8	
18	NSPECIES7	C	8	
19	NSPECIES8	C	8	
20	NSPECIES9	C	8	
21	NSPECIES10	C	8	
22	NSPECIES11	C	8	
23	NSPECIES12	C	8	
24	NSPECIES13	C	8	
25	NSPECIES14	C	8	
26	NSPECIES15	C	8	
27	NSPECIES16	C	8	
28	NSPECIES17	C	8	
29	NSPECIES18	C	8	
30	NSPECIES19	C	8	
31	NSPECIES20	C	8	
32	NSPECIES21	C	8	
33	NSPECIES22	C	8	
34	NSPECIES23	C	8	
35	NSPECIES24	C	8	
36	NUM_SECT	N	2	0
37	NUM_INTERV	N	2	0
38	DAYINTERV	N	3	0
39	TIME_PER	N	1	0
40	DAY_TYPES	N	1	0
41	PURPOSE	C	59	
42	AREA	N	6	2

Indexes:

DEF1.NTX: water_name+epa_number
DEF2.NTX: project_id
DEF3.NTX: epa_number
DEF4.NTX: water name

```
Structure for: DAYL.DBF
Number Name            Type Length    Dec
     1 INTERVAL           N      2      0
     2 DAY LENGTH         N      5      2
     3 NO WEEKDAY         N      2      0
     4 NO WEEKEND         N      2      0
Indexes:
   DAYL.NTX: Str(interval,2)



Structure for: INSTANT.DBF
Number Name            Type Length    Dec
     1 PROJECT ID         C      7
     2 WATER_NAME         C     20
     3 SECT_NUM           N      2      0
     4 EPA NUMBER         C     16
     5 INTERAL            N      2      0
     6 DAYCODE            N      1      0
     7 TIMEOFDAY          N      5      2
     8 DATE COUNT         D      8
     9 BOATANGLER         N      4      0
    10 BANKANGLER         N      4      0
    11 TUBEANGLER         N      4      0
    12 ICEANGLER          N      4      0
    13 REMARKS            C     60
    14 CLERK              C      4

Indexes:
   INST1.NTX:   date_count
   INST2.NTX:   water_name
   INST3.NTX: epa_number
```

Structure for: INTERVIE.DBF

Number	Name	Type	Length	Dec
1	PROJECT ID	C	7	
2	WATER NAME	C	25	
3	SECT_NO	N	2	0
4	EPA NUMBER	C	16	
5	INTERVAL	N	2	0
6	DAYCODE	N	1	0
7	TIMEOFDAY	N	5	2
8	TYPE_ANGLE	C	4	
9	COMPLETE	C	1	
10	DATE INTER	D	8	
11	NO RES	N	2	0
12	NO NRES	N	2	0
13	NO ANGLER	N	2	0
14	HOURS	N	4	1
15	BAIT HOURS	N	4	1
16	LUREHOURS	N	4	1
17	FLYHOURS	N	4	1
18	NO HARVEST	N	3	0
19	NO RELEASE	N	3	0
20	CATCH	N	3	0
21	PSPECIES	C	8	
22	SPECIES1	N	3	0
23	SPECIES2	N	3	0
24	SPECIES3	N	3	0
25	SPECIES4	N	3	0
26	SPECIES5	N	3	0
27	SPECIES6	N	3	0
28	SPECIES?	N	3	0
29	SPECIES8	N	3	0
30	SPECIES9	N	3	0
31	SPECIES10	N	3	0
32	SPECIES11	N	3	0
33	SPECIES12	N	3	0
34	SPECIES13	N	3	0
35	SPECIES14	N	3	0
36	SPECIES15	N	3	0
37	SPECIES16	N	3	0
38	SPECIES17	N	3	0
39	SPECIES18	N	3	0
40	SPECIES19	N	3	0
41	SPECIES20	N	3	0
42	SPECIES21	N	3	0
43	SPECIES22	N	3	0
44	SPECIES23	N	3	0
45	SPECIES24	N	3	0
46	RELSP1	N	3	0
47	RELSP2	N	3	0
48	REL SP3	N	3	0

49	REL_SP4	N	3	0
50	REL_SP5	N	3	0
51	REL_SP6	N	3	0
52	REL_SP7	N	3	0
53	REL_SP8	N	3	0
54	COMMENTS	C	40	
55	CLERK	C	5	
56	Q1	C	2	
57	Q2	C	2	

Indexes:
INTER1.NTX: date_inter INTER2.NTX: water_name INTER3.NTX: epa_number INTER4.NTX: water_name+epa_number

Structure for: INSTPERD.DBF

Number	Name	Type	Length	Dec
1	PROJECT ID	C	7	
2	WATER NAME	C	20	
3	SECT_NUM	N	2	0
4	EPA_NUMBER	C	16	
5	YEAR CENS	C	4	
6	TIMEOFDAY	N	5	2
7	INTERAL	N	2	0
8	DAYCODE	N	1	0
9	BOAT_ESTIM	N	9	0
10	BOAT VAR	N	16	3
11	BANK_ESTIM	N	9	0
12	BANK_VAR	N	16	3
13	TUBE ESTIM	N	9	0
14	TUBE_VAR	N	16	3
15	ICE_ESTIM	N	9	0
16	ICE VAR	N	16	3
17	TOT_ESTIM	N	10	0
18	TOT_VAR	N	17	3
19	HOUR TYPE	C	5	

Indexes:
INPER1.NTX: str(interal,2) INPER2.NTX: water_name INPER3.NTX: epa_number INPER4.NTX: water_name+epa_number

Structure for: INTERSUM.DBF

Number	Name	Type	Length	Dec
1	PROJECT ID	C	7	
2	WATER_NAME	C	25	
3	SECT NUM	N	2	0
4	EPA NUMBER	C	16	
5	TIMEOFDAY	N	5	2
6	INTERAL	N	2	0
7	DAYCODE	N	1	0
8	YEAR_CENS	C	4	
9	NO HARV CR	N	6	3
10	VARHAR_CR	N	8	5
11	NO RELE_CR	N	6	3
12	VAR REL CR	N	8	5
13	CATCH_CR	N	6	3
14	VAR_CAT_CR	N	8	5
15	SPEC_1_CR	N	6	3
16	SPEC_2_CR	N	6	3
17	SPEC_3_CR	N	6	3
18	SPEC 4 CR	N	6	3
19	SPEC_5_CR	N	6	3
20	SPEC_6_CR	N	6	3
21	SPEC_7_CR	N	6	3
22	SPEC_8_CR	N	6	3
23	SPEC_9_CR	N	6	3
24	SPEC 10_CR	N	6	3
25	SPEC 11_CR	N	6	3
26	SPEC_12_CR	N	6	3
27	SPEC_13_CR	N	6	3
28	SPEC_14_CR	N	6	3
29	SPEC 15 CR	N	6	3
30	SPEC_16_CR	N	6	3
31	SPEC_17_CR	N	6	3
32	SPEC_18_CR	N	6	3
33	SPEC 19 CR	N	6	3
34	SPEC_20_CR	N	6	3
35	SPEC_21_CR	N	6	3
36	SPEC_22_CR	N	6	3
37	SPEC 23 CR	N	6	3
38	SPEC_24_CR	N	6	3
39	VAR_SP1_CR	N	8	5
40	VAR_SP2_CR	N	8	5
41	VAR_SP3_CR	N	8	5
42	VAR_SP4_CR	N	8	5
43	VAR_SP5_CR	N	8	5
44	VAR_SP6_CR	N	8	5
45	VAR_SP7_CR	N	8	5
46	VAR_SP8_CR	N	8	5
47	VAR_SP9_CR	N	8	5
48	VAR_SP10CR	N	8	5
49	VAR SP11CR	N	8	5

50	VAR_SP12CR	N	8	5
51	VAR_SP13CR	N	8	5
52	VAR_SP14CR	N	8	5
53	VARSP15CR	N	8	5
54	VAR_SP16CR	N	8	5
55	VAR_SP17CR	N	8	5
56	VAR_SP18CR	N	8	5
57	VAR_SP19CR	N	8	5
58	VARSP20CR	N	8	5
59	VAR_SP21CR	N	8	5
60	VAR__SP22CR	N	8	5
61	VAR_SP23CR	N	8	5
62	VAR_SP24CR	N	8	5
63	REL_SP1CR	N	6	3
64	RELSP2CR	N	6	3
65	REL_SP3CR	N	6	3
66	REL_SP4CR	N	6	3
67	REL_SP5CR	N	6	3
68	REL_SP6CR	N	6	3
69	REL_SP7CR	N	6	3
70	REL_SP8CR	N	6	3
71	VAR_REL1	N	8	5
72	VAR_REL2	N	8	5
73	VARREL3	N	8	5
74	VAR_REL4	N	8	5
75	VARREL5	N	8	5
76	VAR_REL6	N	8	5
77	VAR_REL7	N	8	5
78	VAR_REL8	N	8	5

Indexes:

ISUM1.NTX: str(interal,2)
ISUM2.NTX: water_name
ISUM3.NTX: epa_number
ISUM4.NTX: water name+epa number

Structure for: HARVEST.DBF

Number	Name	Type	Length	De
1	PROJECT_ID	C	7	
2	WATER_NAME	C	25	
3	SECT NUM	N	2	0
4	EPA NUMBER	C	16	
5	TIMEOFDAY	N	5	2
6	INTERAL	N	2	0
7	DAYCODE	N	1	0
8	YEAR_CENS	C	4	
9	NO HARV HA	N	10	0
10	VAR_HAR_HA	N	14	0
11	NO_RELE HA	N	10	0
12	VAR REL HA	N	14	0
13	CATCH_HA	N	10	0
14	VAR CAT HA	N	14	0
15	SPEC_1_HA	N	10	0
16	VAR SP1 HA	N	14	0
17	SPEC_2_HA	N	10	0
18	VAR SP2 HA	N	14	0
19	SPEC_3_HA	N	10	0
20	VAR SP3 HA	N	14	0
21	SPEC_4_HA	N	10	0
22	VAR SP4 HA	N	14	0
23	SPEC_5_HA	N	10	0
24	VAR SP5 HA	N	14	0
25	SPEC 6_HA	N	10	0
26	VAR SP6 HA	N	14	0
27	SPEC_7_HA	N	10	0
28	VAR SP7 HA	N	14	0
29	SPEC_8_HA	N	10	0
30	VAR SP8 HA	N	14	0
31	SPEC 9_HA	N	10	0
32	VAR SP9 HA	N	14	0
33	SPEC_10_HA	N	10	0
34	VAR SP10HA	N	14	0
35	SPEC_11_HA	N	10	0
36	VAR SP11HA	N	14	0
37	SPEC_12_HA	N	10	0
38	VAR SP12HA	N	14	0
39	SPEC_13_HA	N	10	0
40	VAR SP13HA	N	14	0
41	SPEC_14_HA	N	10	0
42	VAR SP14HA	N	14	0
43	SPEC_15_HA	N	10	0
44	VAR SP15HA	N	14	0
45	SPEC_16_HA	N	10	0
46	VAR SP16HA	N	14	0

Indexes:

HARV1.NTX: str(interal,2)
HARV2.NTX: water_name
HARV3.NTX: epa_number
HARV4.NTX: water name+epa number

Structure for: YLDDATA.DBF

Number	Name	Type	Length	Dec
1	PROJECT ID	C	7	
2	WATER NAME	C	20	
3	SECT NUM	N	2	0
4	EPA_NUMBER	C	16	
5	INTERVAL	N	2	0
6	DAYCODE	N	1	0
7	DATE COUNT	D	8	
8	REMARKS	C	60	
9	CLERK	C	4	
10	LENGTH	N	6	1
11	WEIGHT	N	6	3
12	SPECIES	C	'8	
13	TAG NO	C	10	
14	FIN CLIP	C	2	
**	Total¯**		153	

Indexes:
YLD1.NTX : date_count
YLD2.NTX : water_name
YLD3.NTX : epa number
YLD4.NTX : project_ID

Structure for: YLDCALC.DBF

Number	Name	Type	Length	Dec
1	PROJECT_ID	C	7	
2	WATER NAME	C	20	
3	SECT NUM	N	2	0
4	EPA NUMBER	C	16	
5	INTERVAL	N	2	0
6	DAYCODE	N	1	0
7	YEAR CENS	C	4	
8	LEN_SP1	N	5	0
9	LEN_SP2	N	5	0
10	LEN_SP3	N	5	0
11	LEN_SP4	N	5	0
12	LEN_SP5	N	5	0
13	LEN SP6	N	5	0
14	LEN_SP7	N	5	0
15	LEN_SP8	N	5	0
16	LEN SP9	N	5	0
17	LEN_SP10	N	5	0
18	LEN SP11	N	5	0
19	LEN_SP12	N	5	0
20	LEN SP13	N	5	0
21	LEN SP14	N	5	0
22	LEN SP15	N	5	0
23	LEN SP16	N	5	0
24	LEN SP17	N	5	0
25	LEN SP18	N	5	0
26	LEN_SP19	N	5	0
27	LEN SP20	N	5	0
28	LEN_SP21	N	5	0
29	LEN_SP22	N	5	0
30	LEN SP23	N	5	0
36	LEN_SP24	N	5	0
37	LEN1VAR	N	10	0
38	LEN_2_VAR	N	10	0
39	LEN_3_VAR	N	10	0
40	LEN_4_VAR	N	10	0
41	LEN 5 VAR	N	10	0
42	LEN_6 VAR	N	10	0
43	LEN 7 VAR	N	10	0
44	LEN_8_VAR	N	10	0
45	LEN_9_VAR	N	10	0
46	LEN 10 VAR	N	10	0
47	LEN_11 VAR	N	10	0
48	LEN_12_VAR	N	10	0
49	LEN_13 VAR	N	10	0
50	LEN_14 VAR	N	10	0
51	LEN_15 VAR	N	10	0
52	LEN 16 VAR	N	10	0
53	LEN_17 VAR	N	10	0
54	LEN 18 VAR	N	10	0

55	LEN_19_VAR	N	10	0
56	LEN_20_VAR	N	10	0
57	LEN_21_VAR	N	10	0
58	LEN_22_VAR	N	10	0
59	LEN-23-VAR	N	10	0
60	LEN-24-VAR	N	10	0
61	WT SP1	N	9	3
62	WT SP2	N	9	3
63	WT SP3	N	9	3
64	WT SP4	N	9	3
65	WT SP5	N	9	3
66	WT SP6	N	9	3
67	WT SP7	N	9	3
68	WT SP8	N	9	3
69	WT SP9	N	9	3
70	WT SP10	N	9	3
71	WT SP11	N	9	3
72	WT SP12	N	9	3
73	WT SP13	N	9	3
74	WT SP14	N	9	3
75	WTSP15	N	9	3
76	WT SP16	N	9	3
77	WT SP17	N	9	3
78	WT SP18	N	9	3
79	WT SP19	N	9	3
80	WT SP20	N	9	3
81	WT SP21	N	9	3
82	WT SP22	N	9	3
83	WT SP23	N	9	3
84	WT_SP24	N	9	3
85	WT 1 VAR	N	15	0
86	WT 2 VAR	N	15	0
87	WT 3 VAR	N	15	0
88	WT 4 VAR	N	15	0
89	WT-5-VAR	N	15	0
90	WT 6 VAR	N	15	0
91	WT-7-VAR	N	15	0
92	WT 8 VAR	N	15	0
93	WT_9 VAR	N	15	0
94	WT 10 VAR	N	15	0
95	WT 11 VAR	N	15	0
96	WT-12-VAR	N	15	0
97	WT 13 VAR	N	15	0
98	WT-14-VAR	N	15	0
99	WT 15 VAR	N	15	0
100	WT 16 VAR	N	15	0
101	WT 17 VAR	N	15	0
102	WT-18-VAR	N	15	0
103	WT 19VAR	N	15	0
104	WT-20-VAR	N	15	0
105	WT 21 VAR	N	15	0

```
    106 WT 22 VAR          N      1       0
    107 WT_23_VAR          N      1       0
    108 WT_24_VAR          N      1       0
    109 TOT WEIGHT         N      1       3
    110 TOT WT_ VAR        N      1       0
    111 TOT_FISH           N      8       0
    112 WT HEC             N      1       0
    113 WT HEC VAR         N      1       0
    114 FH_HEC             N      8       0
    115 FH HEC VAR         N      1       0

Indexes:
   YLDC1.NTX    interval
   YLDC2.NTX    water name
   YLDC3.NTX    epa_number
   YLDC4.NTX    water name + epa_number
   YLDC5.NTX    project_ID
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